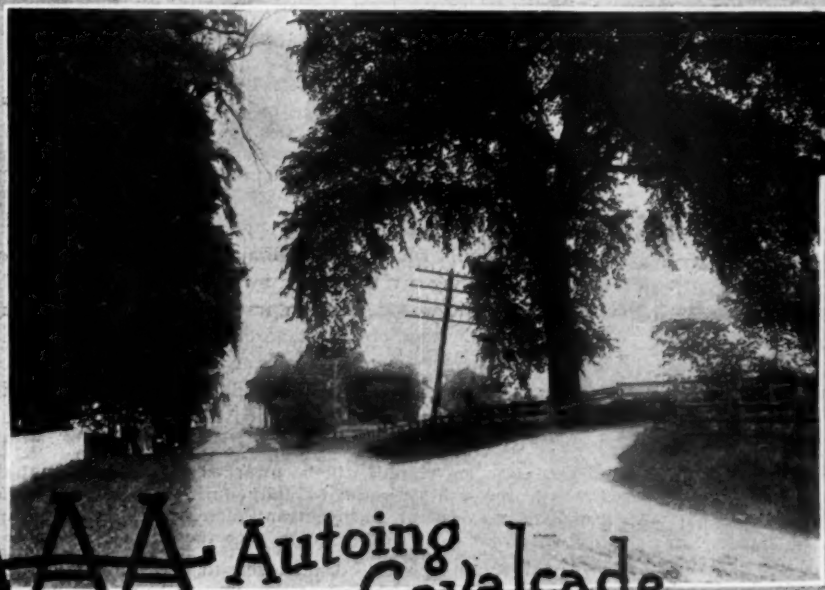


THE AUTOMOBILE



AAA Autoing Cavalcade
Is on its way
From Cleveland to Chicago
to New York

CLEVELAND, O., July 10.—They're on their way—first to Toledo, next to South Bend and then to Chicago—where a two-day rest intervenes before the auto cavalcade will turn about face and start homeward, for the Big Town is home to the whole country at some time during the year, and everyone wants to take a walk along Broadway. It is mighty kind of the Chicagoans to insist upon entertaining in their enthusiastic way, but since many of us have a "show week" near Lake Michigan and—it seems ungenerous to say it—in the pall of smoke which seldom lifts its smutty face we might yearn to continue on our way, Saturday at least and arrive one day sooner at the Jersey City ferry.

Headquarters for the tour have been in the Hollenden Hotel for several days and Chairman F. B. Hower, nervously conscientious, and Secretary Dai Lewis, complacently industrious, accomplished wonders in the final hours of preparation. Numbers and pennants were distributed, rules supplied, hotel applications filed, questions innumerable asked and answered, and finally even the late and noisy ones sought a few hours' rest before the coming of the dawn and its early bestirring in order that "No. 1," an Apperson, driven by the determined yet kindly countenanced Van Sicklen, at 7 o'clock sharp should take to the confetti trail that had been begun as soon as Old Sol showed his ruddy features above the eastern horizon.

Chairman Hower called all the contestants together Tuesday afternoon for final instructions and little was left undone when

the session concluded. In the evening the rooms of the Cleveland Automobile Club in the Hollenden Hotel were crowded to suffocation and not a few failed to woo Morpheus until an early hour this morning. Statistics of the tour give 47 touring cars as competing for the Glidden Trophy, with these clubs represented: New York Motor Club, 11; Cleveland Automobile Club, 9; Chicago Automobile Club, 9; Automobile Club of Buffalo, 5; Pittsburg Automobile Club, 4; Automobile Club of America, 4; Detroit Automobile Club, 4; Westchester Motor Club, 3. There are 14 more touring cars which figure as non-contestants. For the Hower Trophy 13 runabouts are competing, with two runabouts not engaged. Five press and officials' cars bring the total to 81 registered cars, but a score of free lances will be more or less in evidence nearly all the way.

About a hundred cars and 500 people will create some excitement along the route. Trophy donor Glidden is riding in the same car with Chairman Hower, who did not leave until after all the contestants had been sent away. Several of the cars are adding to their quest for honors by endeavoring to complete the run with sealed bonnets. No. 51 Elmore and No. 39 Berliet are in this class. Extra parts carried are scanty and seldom aggregate over \$10 in value. The committee did not give out this information in detail, but will do so later in the tour. In two cars, No. 3 Pierce and No. 19 Premier, surgeons are passengers, but it is hoped that their services will not be required.

Schedule of the Long Tour.

The first day's run to Toledo consists of a stretch of 121 miles, at the end of which the tourists will have an opportunity to compare their experience of past years with the working of the present arrangements for hotel accommodations, the entire charge of which has been turned over to professionals well equipped to give every satisfaction—Thomas Cook & Sons. An experienced advance man in the employ of that firm will precede the tourists and will make all assignments for the occupants of every car, of which he constantly carries a list, the finishing touches to each day's arrangements being made by getting into communication with the executive committee by long-distance 'phone.

As the test is one for touring cars and runabouts under actual



FORTY MILES OUT FROM SOUTH BEND, INDIANA.

touring conditions, the committee deemed it only proper that each tourist should carry his own impedimenta of this kind and so that no provision for an official baggage wagon was made.

The second day's run is to be to South Bend, Ind., a little over 166 miles, and the third day will be slightly more than a century into Chicago, where the Windy City autoists have been making great preparations for the entertainment of the tourists.

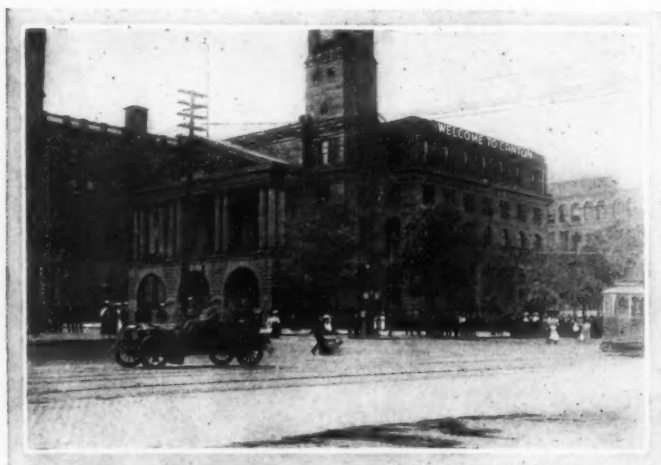
The complete route of the tour is as follows:

Date	Route	Miles	Hotel
July 10	Cleveland to Toledo, O.....	121.0	Boody House
" 11	Toledo to South Bend, Ind.....	166.3	Oliver Hotel
" 12	South Bend to Chicago.....	101.1	Auditorium Annex
" 13	Chicago		
" 14	"		
" 15	Chicago to South Bend, Ind.....	101.2	Oliver Hotel
" 16	South Bend to Indianapolis, Ind.	147.5	Denison Hotel
" 17	Indianapolis to Columbus, O....	174.2	Hartman Hotel
" 18	Columbus to Canton, O.....	151.4	Cortland Hotel
" 19	Canton to Pittsburg.....	99.8	Schenley Hotel
" 20	Pittsburg to Bedford Springs...	97.2	Bedf'd Spgs. Hotel
" 21	Bedford Springs		
" 22	Bedford Springs to Baltimore...	140.2	Belvedere Hotel
" 23	Baltimore to Philadelphia.....	171.9	Bellevue-Stratford
" 24	Philadelphia to New York.....	98.2	
		1,570	

How the Trophy Contestants Will Be Scored.

Some idea of the severity of the conditions under which the cars are to compete may be gleaned from the following excerpts from the rules. For instance, Rule 3 of "Touring Conditions" reads:

"No replacements, replenishments, adjustments, repairs or inspection shall be made upon the car after the same shall have been registered at any night stop of the tour and before it shall



PUBLIC SQUARE AND CITY HALL AT CANTON, OHIO.

be registered out the next succeeding morning. No replacements (except tires) shall be made with parts not inventoried and carried at the start, and if replacements except as above specified are made, the entrant may continue the tour, but not as a contestant. Each entrant may carry as many tires as desired."

This provision was chiefly aimed at the charge made in previous tours that some of the cars were rebuilt between daylight and dawn at many of the stops to enable them to continue the next day. In other words, it means that cars must do the entire distance with no other adjustments than can be made without difficulty, or risk of being penalized, on the running schedule, and also without making other than the most ordinary replacements, all of which must be carried on the car and not added to, as provided by Rule 9, which calls for an inventory of all parts carried previous to the start. It reads as follows:

"Each entrant must furnish an inventory, previous to the start, of all the extra parts carried in his car, and the same shall be put in the records."

Rule II also deals with this point in the following manner:

"A statement must be made by the operator and attested by each occupant of the car at the conclusion of each day's run, naming new parts put on the car and repairs or adjustments, if any, made; and failure to do so, fully and correctly, shall disqualify."

But owing to the impossibility of framing any code of regulations that would satisfactorily eliminate all but one or two cars from the running for first place by the time the end of the tour was reached, it was decided in framing the rules to award the Glidden Trophy to a club, instead of an individual, as previously, though the performance of each car is to be carefully recorded and each successful competitor will receive an award in the shape of a certificate, this being provided for by Rule 6, as follows:

"The Glidden Trophy will be awarded to a club, but the score of each car will be recorded daily during the tour, and at the finish of the contest, each entrant, unless previously disqualified, will receive a certificate in accordance therewith."

An objection was raised, however, to permitting high-powered runabouts to compete on the same basis as touring cars, and, to overcome this, the Hower Trophy of a bronze statue was offered, the rule of the touring conditions covering this point merely stating that "The Hower Trophy will be awarded to the entrant whose car shall have the most points to its credit at the finish."

Each team entered for the Glidden Trophy will start with 1,000 points to its credit, regardless of the number of cars composing it, as formerly provided, instead of 1,000 for a three-car team and 1,280 for a ten-car team, a sliding schedule having been devised to maintain the contestants on the same equal footing in the matter of penalization.

Club of	Initial Credit	Penalization per minute or fraction thereof in excess of two minutes at controls.	Penalization per dollar or fraction thereof of value of parts as per manufacturers' price list.
3 cars	1,000	1-3 point	1-3 point
4 "	"	1-4 "	1-4 "
5 "	"	1-5 "	1-5 "
6 "	"	1-6 "	1-6 "
7 "	"	1-7 "	1-7 "
8 "	"	1-8 "	1-8 "
9 "	"	1-9 "	1-9 "
10 "	"	1-10 "	1-10 "

Previous Tours of the A. A. A.

The first annual tour of the American Automobile Association, starting July 25, 1904, had as its objective point St. Louis, where the Louisiana Purchase Exposition was being held. Sixteen machines started from New York and joined themselves to eleven others from various New England towns. The ranks of the travelers were swelled by additions from all points, continuing by way of Albany, Utica, Syracuse, Rochester, Buffalo, Erie, Cleveland, Toledo, South Bend, Chicago, Pontiac (Ill.), Springfield (Ill.) to St. Louis. At the same time another portion of the tour was being run over the National Highway and through Columbus, Indianapolis and Terre Haute to the Exhibition City, bringing the total number of participants to 108. Practically all

CONTESTANTS IN THE A. A. A. TOUR FOR THE CHARLES J. GLIDDEN TOURING TROPHY.

No.	Entrant.	Car.	Horsepower.	Club.
1	N. H. Van Sicken.....	Apperson	40-45	Chicago Automobile Club
6	T. J. Clark.....	Packard	30	Chicago Automobile Club
24	W. M. Lewis.....	Mitchell	30	Chicago Automobile Club
38	H. C. Tillotson.....	Stoddard-Dayton	35	Chicago Automobile Club
54	Edward Noble.....	Haynes	50	Chicago Automobile Club
55	F. N. Nutt.....	Haynes	30	Chicago Automobile Club
56	F. E. Dayton.....	Columbia	40-45	Chicago Automobile Club
3	R. D. Garden.....	Pierce Arrow	40-45	New York Motor Club
26	A. Cuneo.....	Rainier	30-35	New York Motor Club
39	Arthur N. Jervis.....	Berliet	40	New York Motor Club
45	A. M. Robbins.....	Aerocar	40	New York Motor Club
48	A. J. Scaife.....	White	20	New York Motor Club
32	W. J. Howard.....	Oldsmobile	40	New York Motor Club
30	H. M. Coale.....	Autocar	30	New York Motor Club
31	E. S. Lea.....	Walter	40	New York Motor Club
43	J. W. Mears.....	Acme	40	New York Motor Club
52	Wm. G. Houck.....	Deere	30-35	New York Motor Club
2	K. R. Otis.....	Pierce Arrow	60-65	Cleveland Automobile Club
25	S. Black.....	Lozier	40	Cleveland Automobile Club
28	P. Gaeth.....	Gaeth	35	Cleveland Automobile Club
42	R. H. Tucker.....	Royal Tourist	45	Cleveland Automobile Club
49	Chas. H. Burman.....	Peerless	30	Cleveland Automobile Club
50	W. C. Straub.....	Peerless	30	Cleveland Automobile Club
37	A. L. Petersen.....	Meteor	50	Cleveland Automobile Club
47	Walter C. White.....	White	30	Cleveland Automobile Club
9	George S. Salzman.....	Thomas Flyer	60	Automobile Club of Buffalo
11	Montgomery Hallowell.....	Thomas Flyer	60	Automobile Club of Buffalo
17	F. S. Dey.....	Pierce Arrow	60-65	Automobile Club of Buffalo
27	A. Kumpf.....	Pierce Arrow	40-50	Automobile Club of Buffalo
34	R. L. Lockwood.....	Reo	16	Automobile Club of Buffalo
44	Gus G. Buse.....	Packard	24	Automobile Club of Buffalo
7	A. R. Welch.....	Welch	50	Automobile Club of Detroit
12	R. D. Chaplin.....	Thomas Forty	40	Automobile Club of Detroit
36	E. B. Finch.....	Pungs-Finch	40	Automobile Club of Detroit
46	George F. Barr.....	Aerocar	40	Automobile Club of Detroit
14	Phillip S. Flinn.....	Pierce Arrow	40-45	Pittsburg Automobile Club
21	Thos. P. Jones.....	Pierce Arrow	40-45	Pittsburg Automobile Club
22	H. H. Perkins.....	Packard	30	Pittsburg Automobile Club
29	G. P. Moore.....	Welch	50	Pittsburg Automobile Club
23	H. C. Shoemaker.....	Shoemaker	35-40	Chicago Motor Club
16	Orrel A. Parker.....	Royal Tourist	45	Automobile Club of America
33	R. M. Owen.....	Reo	16	Automobile Club of America
35	R. A. Rainey.....	Reo	16	Automobile Club of America
41	I. C. Kirkham.....	Maxwell	16-20	Westchester Motor Club
58	L. S. Tyler.....	Maxwell	16-20	Westchester Motor Club
59	C. A. Fleming.....	Maxwell	24	Westchester Motor Club
19	G. A. Weldely.....	Premier	24	Automobile Club of Indiana

RUNABOUTS ENTERED FOR THE FRANK B. HOWER TROPHY.

100	A. E. Hughes.....	Pierce Arrow	40-45	Rhode Island Automobile Club
102	H. E. Coffin.....	Thomas Forty	40	Automobile Club of Detroit
103	H. O. Smith.....	Premier	24	Automobile Club of Indiana
104	G. S. Smith.....	Stoddard-Dayton	35	Quaker City Motor Club
106	R. G. Kelsey.....	Matheson	40-45	Long Island Automobile Club
107	Harry E. Stutz.....	Marion	24	American Automobile Association
108	H. K. Sheridan.....	White	30	Cleveland Automobile Club
109	C. S. Johnston.....	Continental	35	American Automobile Association
111	Wallace Owen.....	Pennsylvania	35	Cleveland Automobile Club
112	J. W. Haynes.....	Dragon	24	Chicago Automobile Club
113	H. P. Branstetter.....	Dragon	24	Chicago Motor Club
114	J. G. Barclay.....	Thomas	40	Automobile Club of Buffalo.

NON-CONTESTANTS, TOURING AND RUNABOUT, PARTICIPATING IN THE RUN.

4	H. A. Grant.....	Maxwell	36-40	Westchester Motor Club
13	George M. Davis.....	Thomas Flyer	60	Automobile Club of Buffalo
40	R. H. Johnston.....	White	18	New York Motor Club
51	J. H. Becker.....	Elmore	30-35	Cleveland Automobile Club
105	J. C. Zimmerman.....	Loco runabout	35	Chicago Motor Club
57	A. D. Cressler.....	Thomas	40	Chicago Automobile Club
10	F. J. Pardee.....	American Mors	40-52	Automobile Club of St. Louis
15	G. Cabaune.....	American Mors	24-32	Automobile Club of St. Louis
60	William Turner.....	Thomas Flyer	60	Automobile Club of Buffalo
61	H. G. Smith.....	White	24	Automobile Club of Indiana
90	Special Press Car.....	Packard	30	Chicago
91	THE AUTOMOBILE.....	Aerocar	40	New York
92	Special Press Car.....	Haynes	50	New York
98	Officials' Car.....	Premier	50	Indianapolis
99	Chairman Hower.....	Pierce	50	Buffalo
119	J. W. Moore.....	Moore	40	Automobile Club of America



ON THE A. A. A. TOUR—AN INCIDENT OF WHAT WILL.

the machines reached St. Louis, the tour being more of the nature of a combined run than a competition.

Thirty-two automobiles competed in the 870-mile A. A. A. tour in 1905, the first contest for the Charles J. Glidden touring trophy. Starting from New York, the itinerary was through Hartford, Boston and Plymouth, N. H., to Bretton Woods, and returning by way of Concord, Worcester and Lenox, Mass., to New York. Percy P. Pierce was awarded the trophy. Others finishing with clean scores were Ezra H. Fitch (White), Ralph Coburn (Maxwell), S. B. Stevens (Darracq) and J. C. Kerrison (Cadillac).

No official observers were carried, the contestants as a whole observing the performance of the competing cars, and at the end of the tour voting for the three entrants whose cars, in their opinion, had made the best records. In addition, the Glidden commission employed a formula which took price, equipment and general touring conditions into consideration in awarding the trophy. First class certificates were given to twenty-two contestants who completed the tour and arrived at all night controls before the official closing time. Four second class certificates were awarded to others who completed the tour but failed to make one or more of the controls on time.

Last year's event, the third annual A. A. A. tour and the second competition for the Glidden trophy, was a 1,200-mile run from Buffalo to Bretton Woods, N. H., by way of Utica, Saratoga, Elizabethtown, Lake Champlain, Montreal, Quebec, Jackman and Rangeley, Me. Forty-eight machines started, 13 secured perfect scores, 19 completed the journey with a greater or less number of penalizations, and 20 retired at various points on the journey. Of the six cars competing for the Deming



ABANDONED CHARCOAL OVENS NEAR PITTSBURG, PA.

trophy two obtained perfect scores and four were penalized. The trophy was awarded to C. W. Kelsey, driving a Maxwell.

The 13 with perfect scores for the Glidden Trophy were: Percy P. Pierce (Pierce), A. E. Hughes (Pierce), P. S. Flinn (Pierce), W. E. Wright (Knox), George Soules (Pope-Toledo), Frank E. Wing (Marmon), G. M. Davis (Thomas), C. F. Barrett (Columbia), L. J. Petrie (Stearns), Charles Burnham (Peerless), W. C. Walker (Pope-Hartford), Ernest Keeler (Oldsmobile), G. G. Buse (Packard). Since no winner had evolved and Percy Pierce was one of the perfect score performers, the trophy, according to the deed of gift, remained in the possession of the club which he represented.

But the Automobile Club of Buffalo, at the suggestion of the one who twice had won the trophy for the organization, advised the framing of a new rule, which would prevent the club from retaining possession in case of another tie. Mr. Glidden accepted the changes proposed and now the trophy will go to the club which produces the best team.

Where the Rule of the Road Is Not Always Observed.

When it comes to crossing the mountains of Pennsylvania there will be occasions when the tourist will find it advisable to disregard the rules of passing to the right whenever there is a steep declivity or bad ditch on one side. While horses are becoming more and more accustomed to automobiles, there still will be met with equines which have yet to become placidly acquainted with the automobile. Invariably drivers of such horses will take the inside of a mountain road, whether it be on the right or the left, and those on the run will do well to keep this in mind. The same plan is followed in mountainous countries of Europe, especially in Switzerland. It will be well to have an understanding with the driver of the horse-drawn vehicle before passing, motioning as to which side of the road you will take. There will be miles of mountain highways in Pennsylvania where this situation is apt to arise at any time.

AIRSHIP "PATRIE" SAILS OVER PARIS.

PARIS, July 8.—For the second time in its brief career the military airship *Patrie*, built by the Lebaudy Brothers for the French Government, has sailed over the capital. With a crew of two officers and two men, the dirigible left the army aeronautical station at Meudon, fifteen miles to the west of Paris, at 7:30 A.M. to-day and headed for the city against a fairly strong northwest breeze. After passing the Eiffel Tower the machine veered toward the northwest, passing over Montmartre, then traveled completely over the city, stopping a few minutes above the Place de l'Opéra. Thousands of spectators watched the evolutions of the balloon, which appeared to be under perfect control. A return was made to Meudon about 9 o'clock. The highest speed attained was 31 miles an hour with the wind, and 18 miles an hour to windward. The *Patrie's* previous appearance over Paris was during the automobile salon last year.

AUTO TRAPS ON WAY TO PHILADELPHIA.

PHILADELPHIA, July 8.—Tourists traveling over the main route between Trenton and Philadelphia, via Middletown Township, Bucks County, are warned that the local authorities are operating auto traps as follows:

1. Between Langhorne Borough and Neshaminy Creek, on what is known as Byberry Road.
2. Between Holmesburg Pike and Hulmeville, known as Hulmeville Road.
3. Between Langhorne and Fallsington, leading through Oxford Valley (hamlet).

The tourist is not arrested at the time, but subsequently receives a notice from a Philadelphia law firm, representing the township authorities, requesting him to call and settle, or warrant and appearance will be required.



ONE OF THE THIRTEEN BRIDGES ERECTED TEMPORARILY ACROSS THE GRAND PRIX COURSE NEAR DIEPPE.

FINAL TRIAL SPINS ON DIEPPE COURSE

DIEPPE, June 30.—Tuesday, Wednesday and Thursday last a large proportion of the thousands of visitors gathered here from all parts of the world had an opportunity of watching the cars engaged in the Grand Prix at work on the triangular circuit which will be the scene of the great international contest on July 2. For a month the course has been rigorously closed to racing machines, and those drivers who had not become acquainted with all the sharp turns and grades had to be content with a leisurely jaunt on a touring car under the vigilant eye of Norman gendarmes. The Automobile Club of France enforced this measure to keep the road in perfect condition, and local authorities supported it for the safety of the rural inhabitants, who fear for their lives.

From 3 to 5 o'clock on Tuesday morning thirteen machines were allowed on the course, comprising complete teams of Brasier, Bayard-Clement, Porthos, Motobloc and La Buire. No attempt was made to guard the course, and despite the early hour huge crowds gathered to witness the speeding. Christie and Strang, who were among the spectators, expressed themselves as delighted with the arrangements for the race, but regretted that they had not been able to test their machines on the road as thoroughly as had been done by all the European contestants. Most of the competitors were satisfied with a leisurely run around the course to test their gasoline consumption, Alezy, the late Albert Clement's mechanic, being the only one to travel at top speed over the course.

Darracq, Renault, Panhard, Lorraine-Dietrich and Gobron were given the exclusive use of the course Wednesday morning, also from 3 to 5 o'clock. Rain and wind continuing, some anxiety was displayed by certain drivers as to their ability to finish on the allowance of gasoline. Duray and Rougier had an interesting duel, the former covering the circuit in 44 minutes, or at the rate of 65 miles an hour, and his companion being only one minute slower. Christie was out early on the highway between Dieppe and Rouen, where he covered 100 kilometers, including three complete turns, in 57 minutes, which gives an average of 65 miles an hour.

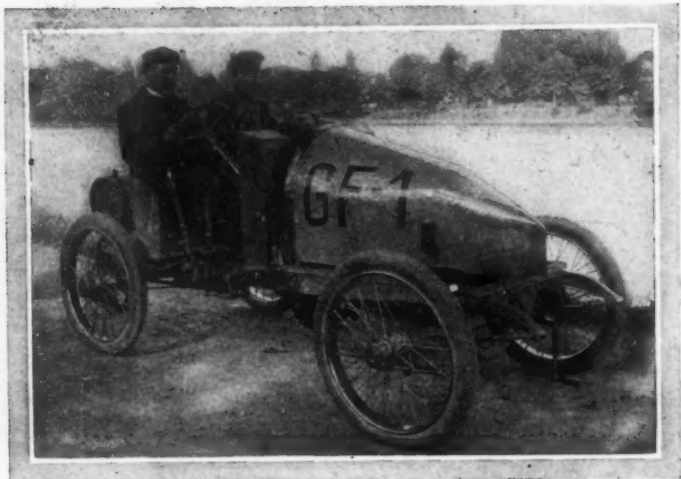
Thursday morning, the course being thrown open to all the foreign machines, comprising Christie, Fiat, Mercedes, Germain, Hise, Weigel and Baras' Brasier, the crowd was so dense that it is miraculous no accidents took place. Victor Breyer, general manager for the racing board, as well as the members of the club who were present, did not hesitate to condemn the Dieppe authorities for refusing to allow the road to be guarded by gendarmes. Nazzaro, on his Fiat, made an excellent impression by traveling round the course in 42 minutes, thus confirming the good opinion already held of him here. Christie made a couple of rounds in good time, the manner in which his machines took the curves calling forth much admiration. The two Weigel machines only arrived from England at three o'clock and one hour later were on the course, but failed to show anything more than a moderate speed. By six o'clock the two



VICTOR BREYER, SECRETARY OF THE COMMISSION SPORTIVE.



CHRISTIE AND HIS GRAND PRIX RACER WITH A DIEPPE SETTING.



GILLET-FOREST, CANDIDATE FOR SPORTING COMMISSION CUP.

Britishers were back in Dieppe, where they took possession of the only two empty rooms to be found in the town, and refused to move out despite the cries and gesticulations of the landlord.

Contrary to last year's muddle of figures on the Sarthe course, the score board on the Dieppe circuit will be the embodiment of simplicity, declare officials. Total elapsed time only for each machine will be recorded on the score board, and not clock time as on previous occasions. On the completion of each round the general classification, again with elapsed time, will be published on a separate board. The machines of each nation having been given a distinctive color, the same colors will form the ground work on which the names of the cars will be painted on the score board. To enable spectators to calculate the rate of travel for each round, a printed table will be distributed showing the time necessary to cover the 77 kilometers of the course at all speeds from 80 to 125 kilometers an hour. Sporting Commission machines will have their own score board, their times being kept quite distinct from that of the Grand Prix racers.

DUPUY AND STEARNS VISIT FRENCH CLUB.

PARIS, July 1.—Tanned by sixty days' exposure to the fiery rays of the southern sun, the blinding mistral and mountain winds, Georges Dupuy piloted his dusty, travel-stained Yankee Stearns through the octroi gates at Vincennes Saturday last, passed down the crowded Grands Boulevards and drew up in front of the majestic home of the Automobile Club of France on the Place de la Concorde with a toot of the horn containing a world of significance. As the manager of the Gold Cup tour descended triumphantly from behind the steering wheel and advanced both hands to greet the twenty-five pairs outstretched to meet him, there was a touch of pardonable pride in his rejoinder, "nothing could have been easier" to the slightly sarcastic *Tiens*, got back?"

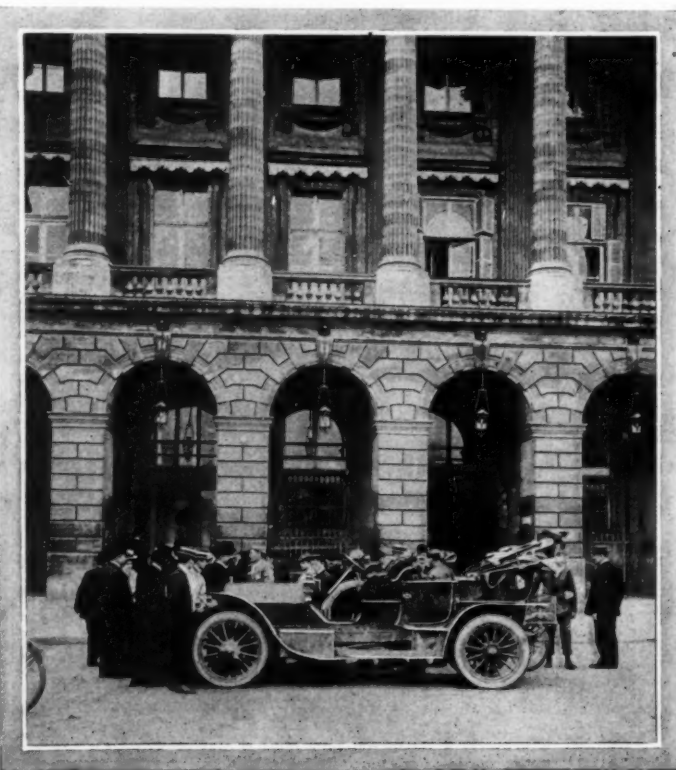
Although the American caravan, as the French have unanimously dubbed it, will not be seen in France this year, Dupuy's preliminary trip has made its realization possible next summer under most favorable conditions. A start was made from New York at too late a date, and although no time was wasted en route, so much detail work had to be attended to and so much information gathered for the guide book to be published on touring in Europe that the original schedule could not be adhered to. This preliminary journey of 4,000 miles through France, Spain, Italy, Austria, Germany and Belgium proved that the tour is one of the most interesting and agreeable to be found in the whole world. Compared with America, road conditions throughout are ideal, and there is a wealth of old world customs, historic scenes and varied scenery such as can be found nowhere else. Starting from Antwerp, Dupuy relates that he ran directly to Paris, where the actual work of organizing for

the final tour commenced. From the French capital the run was into Normandy and Brittany, doubling back to Le Mans in order to make a complete circuit of the Chateaux of Touraine, then down to Bordeaux, followed by an all-night journey, time being precious, as far as Bayonne on the Spanish frontier. Here the original plan had to be departed from, the Stearns only proceeding over the Pyrenees as far as San Sebastian, doubling back and heading for the French shores of the Mediterranean. Points touched on the southern run through Italy were Genoa, Florence, Rome and Naples, the machine then heading northward along the shores of the Adriatic into Austria and Germany. Vienna, Dresden, Berlin, Hanover and Cologne each had an opportunity of inspecting the American machine, and the entry into France was made through Belgium, and after which a straight run was made to Paris. England was not visited on the preliminary trip, touring conditions there being so well known and the British clubs having offered to give generous help in the organization of the journey.

Not only in Paris, but throughout all the town en route where European touring machines are familiar sights, the liveliest interest was shown in the American machine. The safe return to Paris has brought before the public the fact that other than French machines are capable of undertaking a journey which calls for the highest qualifications. American machines have often been round Europe individually, but it needed the publicity attached to the performance of the Stearns to bring their value prominently before the French public. Georges Dupuy intends to run to Havre in a few days and will ship his machine for New York, arriving there about the middle of the present month, and will immediately begin work on next year's plans.

MANAGEMENT PERFECT, SAYS MR. THOMPSON.

PARIS, July 6.—Chairman Jefferson DeMont Thompson, of the A. A. A. Racing Board, has arrived here on his automobile from Dieppe, where he was the guest of the Automobile Club of France at the Grand Prix. He is enthusiastic over the excellent management of the race, and declares the patrolling of the course by troops and gendarmes was perfect, while the arrangements controlling the cars themselves could not have been better.



GEORGES DUPUY FINISHING TOUR BEFORE THE A. C. F.



IN view of the action of the New Jersey Assembly in passing the special bill permitting the use of the Jersey roads for the Vanderbilt Cup Race this fall with but five dissenting votes, it would appear as if its ratification by the Senate were merely a formality, and that the holding of the race is assured. The Senate is to convene this week and, it is believed, will act favorably upon the measure without delay, and as Governor Stokes has already given his approval to the Racing Committee of the American Automobile Association, he will doubtless sign the bill at once. Jefferson DeMont Thompson, chairman of the Board, who is now abroad, has been kept advised of the developments and will be notified by cable of their successful culmination, in which event he will make arrangements to obtain foreign entries before returning to New York.

A. R. Pardington, acting chairman of the A. A. A. Racing Board; F. H. Elliott, secretary of the American Automobile Association, and Charles T. Terry, chairman of the Association's Legislative Board, visited Trenton on Monday and held a long conference with Governor Stokes regarding the prospects for holding the race in New Jersey in October. The Governor is heartily in favor of it, and believes the Senate will unanimously concur in the action of the House, which has already given its sanction, the bill having been introduced by Assemblyman Randolph Perkins, of Union County, himself an enthusiastic automobilist. At least thirteen Senators are counted upon as being favorable to the measure, while only eleven are required to pass it.

Once in effect, there is little doubt that at least half a dozen

counties will bid for the event. There is already a good sized boom in Monmouth County to obtain it for that section, the most favored course being that from Lakewood past the Rockefeller estate to Burnside, 5 miles; straight to West Point Pleasant, 9 miles; to Manasquan, Sea Girt, Spring Lake and Como, 15 miles; to Five Point Corners to Alairs, 22 miles, and back to Lakewood, 28 miles. This is, however, but one of the many thirty-mile circuits which can easily be found in the State once the proper sanction is obtained. Naturally, no course will be decided upon until the officials of the A. A. A. have closely inspected all the most desirable locations. The route will naturally be kept as far away from large towns as possible, and will also be one that is not too accessible from New York.

In anticipation of favorable action without delay, the Racing Board of the A. A. A. has held several conferences within the past few weeks, at most of which W. K. Vanderbilt, Jr., was present, though no public announcement will be made until it is possible to issue entry blanks. The date for the elimination race, however, has been set for October 5, with October 19 as the date of the race itself, though it is hoped to be able to dispense with the running of an elimination race altogether, and even though it should be necessary to hold such trials, it is by no means certain that they will be run off on the regular cup course. The Association has made all preparations for the holding of the race, and is only awaiting the favorable action of the New Jersey Senate, on which point there appears to be little or no doubt of success, so that a Vanderbilt Cup Race over a Jersey course seems assured.



ON THE SPRINGFIELD ROAD, NOT FAR FROM PLAINFIELD, ONE OF NEW JERSEY'S HIGHLY IMPROVED THOROUGHFARES.



BOULEVARD AT WILDWOOD WHICH WAS USED FOR RACING.

WILDWOOD'S TWO-DAY CARNIVAL.

WILDWOOD, N. J., July 5.—The two-day automobile carnival which has made the habitués of this resort forget their wonted amusements for the time, and has brought the virtues of the billiard table as a couch to the fore, came to a close yesterday afternoon in a speedfest which even the blasé racegoers admitted was first class. The direct rays of the limelight were concentrated, of course, on the 120-horsepower Thomas Flyer, driven by Montague Roberts, which demonstrated its ability to the satisfaction of the expert and tyro alike. Twice it officially burned up the mile course in the fast time of 46 and 44 seconds. Although nearly 100 feet wide, Central avenue is but a trifle over a mile and a half long, and, with but a quarter mile at either end to attain speed and halt, Roberts was badly handicapped, as he had to shut off long before the finish.

In the free-for-all the Stanley 30, driven by Walter Harper, was but 50 yards behind the big Thomas at the finish, with the Stearns 30-60, Hoffman driving, but 20 yards behind the steamer. The Stanley's time was figured out at .52 flat and the Stearns at 53 4-5. In the time trials Roberts did the mile in 0:44 flat—a most excellent performance under the circumstances.

Another fast race was that for the Hand Cup, which went to the Packard 30, which, with Samuel Cullom driving, negotiated the course in 1:05. The Oldsmobile 35, George Parker up, captured the \$2,750-and-under gasoline class race for the Wildwood-by-the-Sea Cup in 1:05 from a big field. Harper drove his 20 Stanley to a win in the Quaker City Motor Club runabout race for the Martindale Cup in 1:06, and in the touring car class open only to Quaker City members "Ollie" Hoffman beat out the Chadwick and the Stanley in the fast time of 1:03 4-5.

In the \$3,500-and-under class for the Founder's Cup Roberts evidently had the other drivers scared, for he was allowed to pull down the cup in the comparatively slow time of 1:09 1-5 from such fast cars as the Stearns 30-60 and the Chadwick 60,



MONTAGUE ROBERTS AND THE THOMAS "VANDERBILT CAR."

which had negotiated the course under the minute several times in practice. Following is a summary of the races:

GASOLINE CARS, \$1,500 AND UNDER.

- | | |
|--|---------------|
| 1. Reo, 16-h.p.; driver, George Vennell..... | Time 1:14 1-2 |
| 2. Buick, 22-h.p.; driver, C. A. Godshalk..... | |

GASOLINE CARS, \$2,750 AND UNDER (WILDWOOD CUP).

- | | |
|---|------|
| 1. Oldsmobile, 35-h.p.; driver, George P. Parker..... | 1:05 |
| 2. Wayne, 35-h.p.; driver, N. C. Mullen..... | |
| 3. Maxwell, 40-h.p.; driver, W. C. Longstreth..... | |

FOUR-CYLINDER CARS, \$2,000 AND UNDER (ELSA CUP).

- | | |
|--|------|
| 1. Buick, 24-h.p.; driver, C. A. Godshalk..... | 1:40 |
| 2. Moline, 24-h.p.; driver, J. A. Bunn..... | |
| 3. Mora, 24-h.p.; driver, Wm. M. David..... | |

OPEN, \$5,500 AND UNDER (FOUNDER'S CUP).

- | | |
|---|----------|
| 1. Thomas, 60-h.p.; driver, Montague Roberts..... | 1:09 1-5 |
| 2. Stearns, 30 to 60-h.p.; driver, Oliver W. Hoffman..... | |
| 3. Chadwick, 60-h.p.; driver, William Haupt..... | |

UNATTACHED OWNER'S RACE (HAND CUP).

- | | |
|---|---------|
| 1. Packard, 30-h.p.; driver, Samuel Cullom..... | :60 1-5 |
| 2. Stanley, 20-h.p.; driver, M. F. Dobbins..... | |
| 3. Stoddard-Dayton, 30 to 35-h.p.; L. W. Dykeman..... | |

FREE-FOR-ALL (GREAT CUP).

- | | |
|--|-----|
| 1. Thomas Flyer, 120-h.p.; driver, Montague Roberts..... | :46 |
| 2. Stanley, 30-h.p.; driver, D. W. Harper..... | |
| 3. Stearns, 30 to 60-h.p.; driver, O. W. Hoffman..... | |
| 4. Packard, 30-h.p.; driver, Samuel Cullom..... | |

QUAKER CITY MOTOR CLUB RUNABOUT (MARTINDALE CUP).

- | | |
|---|------|
| 1. Stanley, 20-h.p.; driver, D. W. Harper..... | 1:06 |
| 2. Packard, 30-h.p.; driver, Samuel Cullom..... | |
| 3. Oldsmobile, 35-h.p.; driver, George P. Parker..... | |

QUAKER CITY MOTOR CLUB TOURING CARS (OTTEN'S CUP).

- | | |
|---|----------|
| 1. Stearns, 30 to 60-h.p.; driver, O. W. Hoffman..... | 1:03 4-5 |
| 2. Chadwick, 30-h.p.; driver, Edward Wilkie..... | |
| 3. Stanley, 20-h.p.; driver, M. W. Dobbins..... | |

GASOLINE CARS, \$2,500 AND UNDER.

- | | |
|---|----------|
| 1. Stoddard-Dayton, 30 to 35-h.p.; driver, L. Dykeman.... | 1:18 1-5 |
| 2. Wayne, 30 to 35-h.p.; driver, W. C. Mullen..... | |
| 3. Buick, 24-h.p.; driver, C. A. Godshalk..... | |

TIME TRIALS (CITIZENS' CUP).

- | | |
|--|-----|
| 1. Thomas Flyer, 120-h.p.; driver, Montague Roberts..... | :44 |
| (All other contestants withdrew.) | |

TIME TRIALS, FULLY EQUIPPED TOURING CARS.

- | | |
|--|----------|
| 1. Autocar, 30-h.p.; driver, W. G. Brooks..... | 1:18 1-5 |
|--|----------|

The tournament began on Wednesday afternoon with a reliability run of the Quaker City Motor Club and unattached automobilists from Gloucester to this place, in which forty-five cars took part. The run was a nearest-to-a-mile-in-three-minutes affair, and checkers were located at unknown points along the 82-mile course to keep tabs on the contestants as they passed. In this manner those who exceeded or fell behind the 20-miles-an-hour schedule were easily apprehended. The roads were in such condition and the country so flat that the majority of the cars would have had little difficulty in making the run in two and a half hours. The committee, after a three-hours' wrestle with the checkers' lists and starters' and judges' cards, announced Evans Church, driving a White steamer, as the winner of the Quaker City Motor Club class cup, and J. F. Buchanan, in a Royal Tourist, as the victor in the unattached class. To Church went the real honors, for Buchanan had a five-point penalty chalked up against him by the first checker. After the run all the competing cars were placed on exhibition on the Board Walk, and this phase of the carnival was a huge success. On the morning of the Fourth over a hundred cars turned up for the big parade along the five-mile Board Walk. First prize in the touring car class was awarded by the judges to the West-Stillman Company's Pennsylvania, with a handsomely decorated Thomas Flyer a close second. In the runabout class A. L. Kull's Golden Dragon was the unanimous choice of the judges, and Herman Buckborn's Oldsmobile was awarded second honors.

DENMARK'S INTERNATIONAL AUTO SHOW.

In connection with the Copenhagen International Automobile show, from September 28 to October 7, a brief descriptive handbook has been issued in English by the organizing committee. Denmark being the largest user of motor boats in the world, considerable attention will be paid to power craft; commercial vehicles, motors for agricultural purposes, lifeboats and automobile fire equipments are to form important sections of the show. Chairman Herr L. Bendixen, of Copenhagen, has charge of entries.

MATERIALS FOR AUTOMOBILE CONSTRUCTION*

By THOMAS J. PAY, E.E.

THE right thing for the place demands as a condition that the place be located, and so it is with the automobile—the service for which an automobile is designed must have a lot to do with the class of materials to be selected and used. In the main, it will be possible to say, high-speed cars must be light and hence the materials must have great initial strength, whereas on the other hand low-speed automobiles do not have to be so light and so it is feasible to employ comparatively more of the weaker material.

Skill and judgment can be displayed in the selection of the several grades of materials for the respective parts, in view of the service to be rendered, and the cost, as well as the degree of satisfaction, must depend almost entirely upon that skill. In any establishment devoted to the manufacture of automobiles there are several matters to be viewed with more or less alarm, and they must receive mention here because the question of the materials of construction depends to some extent, if not in a large measure, upon them.

One extremely serious question is the relation of the purchasing forces to the designing department. It is not at all uncommon to find that between the departments that fix upon the sizes of parts and the forces that select and purchase the materials there is no binding relation, and in some cases not even the outward semblance of accord. It is useless to depict a part, such as a crankshaft, axle or radius rod of any size, demanding specification steel, unless the desired grade of steel is purchased. This is so self-evident that it would seem wholly unnecessary to even mention the fact; but it so often happens that the materials purchased are not in conformity with the specifications that it is not only desirable but necessary to emphasize the fact and deplore the circumstances.

There are times of industrial exhilaration during which it is difficult to procure materials of some extra quality, and this circumstance is frequently accepted as an excuse in the purchase of inferior products. Sometimes vendors who prefer to dispose of wares in stock claim equally high ability for what is obviously inferior product and sustain their claim with incompetent purchasing representatives whose position and authority enable them to disregard the specifications. In any case, it is quite plain to be seen how essential it is to fix upon the materials to be employed in any given situation, and having done so, to allow a vendor or representative to disregard the requirements is equal to not having fixed upon that quality at all. This is not to say everything should be as fine as possible from an abstract point of view, for in many situations positively low grades of materials can be made to serve perfectly well, and it should be considered no impropriety to utilize such products when the situation warrants.

Of the parts in an automobile, some of them cannot be altered in quality with the weight or speed of the car, and should be considered on a basis representing the responsibility of position, as, for instance, crankshafts must be looked upon as quite independent of car weight or speed and should be designed in view of:

- (a) The diameter of one cylinder.
- (b) The diameter and weight of the flywheel.

It not infrequently happens that even a one-cylinder motor holds all the conditions that would demand the use of an alloy steel crankshaft of the most excellent quality. Where a car, by striking an obstruction, as when the wheels depress into a mud hole, arrests the motion of a flywheel of good diameter and some weight, the dimensions and quality of the crankshaft will there be fixed quite independent of all other considerations.

What must be claimed, then, is that crankshafts are governed, in so far as their materials are concerned, by special and more or less independent considerations, some of which are too obvious to require mention here. Moreover, crankshafts must be of extra good quality of material to be worthy.

The selection can be made over a wide range merely because a wide range of superior steel is afforded, but there is very little carbon steel that can properly apply to an automobile crankshaft; indeed, the author does not recommend the use of carbon steel for the purpose, although much carbon steel is employed under product No. XXXXIL., and would serve very well for certain classes of motors—that is, four or six-cylinder motors with a bore and stroke of four inches or less and a flywheel sixteen inches in diameter or less. But this material would not be nearly so secure for the purpose as No. LI. or numerous other products available, and at equal cost for finished crankshafts it would be absurd to select the carbon steel product instead of chrome-nickel or chrome-vanadium steel.

The reasoning that applies to crankshafts applies equally to the several other parts, provided only an allowance be made for the respective duties, and the selection be made accordingly. The most direct way to settle this matter would be to name the parts and state the quality of materials for each under the varying conditions. True, this method of procedure would leave out the reasons, but they are more or less obvious and the purpose here is to compact as much actual data as possible in such form as to render it readily available. With this idea uppermost the data will be set down in the Table A, and besides giving the names of parts the qualities of materials will be referred to by test record numbers, thus enabling selections over the broadest ranges and in view of the service to be rendered.

TABLE A.

MATERIAL CLASSIFICATION.

Dynamic Work.—Including crankshafts, distance rods, clash gears, piston pins, jackshafts and parts generally which are required to sustain prime shock loads should be composed of materials as follows:

- | | | |
|--|-----|------------------------------|
| From the finest raw materials low in sulphur and phosphorus. | (a) | chrome-nickel steel. |
| | (b) | chrome-vanadium steel |
| | (c) | chrome-nickel-vanadium steel |
| | (d) | chrome-wolfram steel |
| | (e) | silico-manganese steel |
| | (f) | chrome steel |
| | (g) | vanadium steel. |

Static Work.—Including parts subject to high static loads; no shock.

- | | | |
|--|-----|-------------------------------|
| From fine raw materials, fairly low in sulphur and phosphorus. | (a) | chrome-nickel steel |
| | (b) | chrome-vanadium steel |
| | (c) | vanadium steel |
| | (d) | silico-manganese steel |
| | (e) | finer grades of carbon steel. |

Static Work.—For minor drop forgings and other parts of small responsibility.

- | | | |
|--|-----|------------------------------|
| From excellent grades of raw material. | (a) | chrome-nickel steel (mild) |
| | (b) | chrome-vanadium steel (mild) |
| | (c) | mild carbon steel |
| | (d) | wrought iron. |

There are many cars in which the materials employed are not nearly so good as the products listed for parts in Table A, and for that matter the tests given in this work, such as are recommended for use, are of much finer steel than that to be had by ordering "machine steel" or "cold rolled steel" or even some "brands" of steel. The test No. CV. is of an average machine steel product and as an inspection of it will show, this product has no rightful place even in a low-priced runabout, although there are uses for just such steel, but not in automobiles. Table A does not provide for absolutely everything for an automobile, but space would not allow of any such amount of detail; moreover, so many parts are so obviously like other parts in so far as duty is concerned that they will readily suggest themselves.

* Extract from Chapter I, Materials for Automobile Construction. By Thomas J. Pay, E.E. Published by the Class Journal Publishing Company, New York.

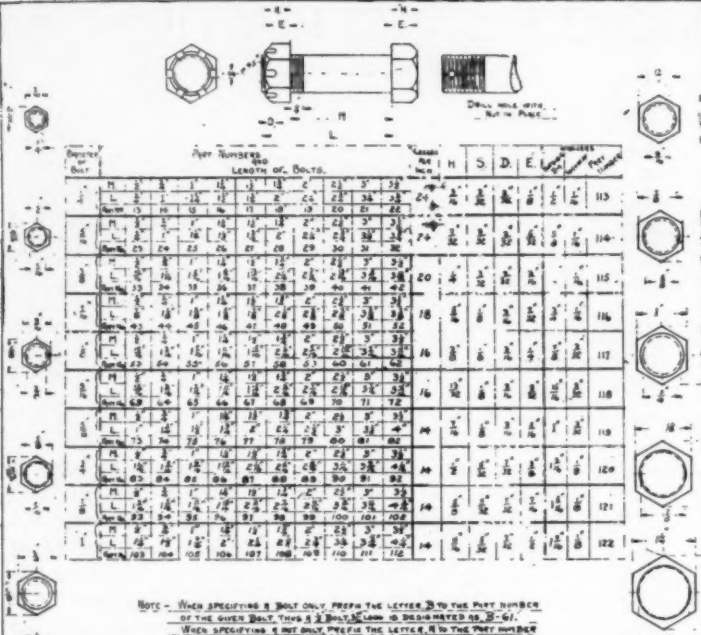


Table D

U.S. STANDARD THREADS

DIAMETER	LENGTH	NUMBER OF THREADS	DIAMETER	LENGTH	NUMBER OF THREADS
1/8"	1/2"	28	1 1/8"	1 1/2"	16
1/4"	3/4"	20	1 1/4"	1 3/4"	14
3/8"	1"	16	1 3/8"	2"	12
1/2"	1 1/4"	12	1 1/2"	2 1/4"	10
5/8"	1 3/4"	10	1 3/4"	2 3/4"	8
3/4"	2"	8	2"	3"	6
7/8"	2 1/4"	6	2 1/4"	3 1/2"	4
1"	2 3/4"	4	2 3/4"	4"	3
1 1/8"	3"	3	3"	5"	2
1 1/4"	3 1/4"	2	3 1/4"	6"	1 1/2
1 1/2"	3 1/2"	1 1/2	3 1/2"	7"	1
1 3/8"	3 3/4"	1	3 3/4"	8"	3/4
1 1/2"	4"	3/4	4"	9"	1/2
1 3/4"	4 1/4"	1/2	4 1/4"	10"	1/2
2"	4 1/2"	1/2	4 1/2"	11"	1/2
2 1/4"	4 3/4"	1/2	4 3/4"	12"	1/2
2 3/4"	5"	1/2	5"	13"	1/2
3"	5 1/4"	1/2	5 1/4"	14"	1/2
3 1/4"	5 1/2"	1/2	5 1/2"	15"	1/2
3 1/2"	5 3/4"	1/2	5 3/4"	16"	1/2
3 3/4"	6"	1/2	6"	17"	1/2
4"	6 1/4"	1/2	6 1/4"	18"	1/2
4 1/4"	6 1/2"	1/2	6 1/2"	19"	1/2
4 1/2"	6 3/4"	1/2	6 3/4"	20"	1/2
4 3/4"	7"	1/2	7"	21"	1/2
5"	7 1/4"	1/2	7 1/4"	22"	1/2
5 1/4"	7 1/2"	1/2	7 1/2"	23"	1/2
5 1/2"	7 3/4"	1/2	7 3/4"	24"	1/2
5 3/4"	8"	1/2	8"	25"	1/2
6"	8 1/4"	1/2	8 1/4"	26"	1/2
6 1/4"	8 1/2"	1/2	8 1/2"	27"	1/2
6 1/2"	8 3/4"	1/2	8 3/4"	28"	1/2
6 3/4"	9"	1/2	9"	29"	1/2
7"	9 1/4"	1/2	9 1/4"	30"	1/2
7 1/4"	9 1/2"	1/2	9 1/2"	31"	1/2
7 1/2"	9 3/4"	1/2	9 3/4"	32"	1/2
7 3/4"	10"	1/2	10"	33"	1/2
8"	10 1/4"	1/2	10 1/4"	34"	1/2
8 1/4"	10 1/2"	1/2	10 1/2"	35"	1/2
8 1/2"	10 3/4"	1/2	10 3/4"	36"	1/2
8 3/4"	11"	1/2	11"	37"	1/2
9"	11 1/4"	1/2	11 1/4"	38"	1/2
9 1/4"	11 1/2"	1/2	11 1/2"	39"	1/2
9 1/2"	11 3/4"	1/2	11 3/4"	40"	1/2
9 3/4"	12"	1/2	12"	41"	1/2
10"	12 1/4"	1/2	12 1/4"	42"	1/2
10 1/4"	12 1/2"	1/2	12 1/2"	43"	1/2
10 1/2"	12 3/4"	1/2	12 3/4"	44"	1/2
10 3/4"	13"	1/2	13"	45"	1/2
11"	13 1/4"	1/2	13 1/4"	46"	1/2
11 1/4"	13 1/2"	1/2	13 1/2"	47"	1/2
11 1/2"	13 3/4"	1/2	13 3/4"	48"	1/2
11 3/4"	14"	1/2	14"	49"	1/2
12"	14 1/4"	1/2	14 1/4"	50"	1/2
12 1/4"	14 1/2"	1/2	14 1/2"	51"	1/2
12 1/2"	14 3/4"	1/2	14 3/4"	52"	1/2
12 3/4"	15"	1/2	15"	53"	1/2
13"	15 1/4"	1/2	15 1/4"	54"	1/2
13 1/4"	15 1/2"	1/2	15 1/2"	55"	1/2
13 1/2"	15 3/4"	1/2	15 3/4"	56"	1/2
13 3/4"	16"	1/2	16"	57"	1/2
14"	16 1/4"	1/2	16 1/4"	58"	1/2
14 1/4"	16 1/2"	1/2	16 1/2"	59"	1/2
14 1/2"	16 3/4"	1/2	16 3/4"	60"	1/2
14 3/4"	17"	1/2	17"	61"	1/2
15"	17 1/4"	1/2	17 1/4"	62"	1/2
15 1/4"	17 1/2"	1/2	17 1/2"	63"	1/2
15 1/2"	17 3/4"	1/2	17 3/4"	64"	1/2
15 3/4"	18"	1/2	18"	65"	1/2
16"	18 1/4"	1/2	18 1/4"	66"	1/2
16 1/4"	18 1/2"	1/2	18 1/2"	67"	1/2
16 1/2"	18 3/4"	1/2	18 3/4"	68"	1/2
16 3/4"	19"	1/2	19"	69"	1/2
17"	19 1/4"	1/2	19 1/4"	70"	1/2
17 1/4"	19 1/2"	1/2	19 1/2"	71"	1/2
17 1/2"	19 3/4"	1/2	19 3/4"	72"	1/2
17 3/4"	20"	1/2	20"	73"	1/2
18"	20 1/4"	1/2	20 1/4"	74"	1/2
18 1/4"	20 1/2"	1/2	20 1/2"	75"	1/2
18 1/2"	20 3/4"	1/2	20 3/4"	76"	1/2
18 3/4"	21"	1/2	21"	77"	1/2
19"	21 1/4"	1/2	21 1/4"	78"	1/2
19 1/4"	21 1/2"	1/2	21 1/2"	79"	1/2
19 1/2"	21 3/4"	1/2	21 3/4"	80"	1/2
19 3/4"	22"	1/2	22"	81"	1/2
20"	22 1/4"	1/2	22 1/4"	82"	1/2
20 1/4"	22 1/2"	1/2	22 1/2"	83"	1/2
20 1/2"	22 3/4"	1/2	22 3/4"	84"	1/2
20 3/4"	23"	1/2	23"	85"	1/2
21"	23 1/4"	1/2	23 1/4"	86"	1/2
21 1/4"	23 1/2"	1/2	23 1/2"	87"	1/2
21 1/2"	23 3/4"	1/2	23 3/4"	88"	1/2
21 3/4"	24"	1/2	24"	89"	1/2
22"	24 1/4"	1/2	24 1/4"	90"	1/2
22 1/4"	24 1/2"	1/2	24 1/2"	91"	1/2
22 1/2"	24 3/4"	1/2	24 3/4"	92"	1/2
22 3/4"	25"	1/2	25"	93"	1/2
23"	25 1/4"	1/2	25 1/4"	94"	1/2
23 1/4"	25 1/2"	1/2	25 1/2"	95"	1/2
23 1/2"	25 3/4"	1/2	25 3/4"	96"	1/2
23 3/4"	26"	1/2	26"	97"	1/2
24"	26 1/4"	1/2	26 1/4"	98"	1/2
24 1/4"	26 1/2"	1/2	26 1/2"	99"	1/2
24 1/2"	26 3/4"	1/2	26 3/4"	100"	1/2

NOTE: WHEN SPECIFYING A BOLT, GIVE THE LETTER OF THE FIRST NUMBER OF THE GIVEN BOLT, THE SIZE OF THE BOLT, AND THE LENGTH OF THE BOLT. WHEN SPECIFYING A NUT, GIVE THE LETTER OF THE FIRST NUMBER OF THE GIVEN NUT, THE SIZE OF THE NUT, AND THE LENGTH OF THE NUT.

Bolts, for instance, are not provided for, but the Table D takes care of this matter in a very simple and on the whole effective manner. This standard of bolts and nuts was devised by the author for the S. & M. Simplex cars, July 15, 1904, and was revised and issued for the Ellsworth cars in the manner shown in Table D. The quality of material to use in bolts and nuts is not easy to fix upon, because much of the alloy steel tried for this purpose proved to be of no great value. The chrome-nickel steel, test No. LIII., would be thoroughly good and is used by the author for important bolts and nuts. The nickel-steel, test No. LXXXXV., would be a good second, but ordinary nickel-steel answering the United States Government specification is not recommended.

This product, No. LXXXXV., was tried out for bolts, nuts and small parts in the B. L. & M. 1906 racing car and proved to be most unworthy indeed; where the author found this product so uncertain for even moderate service it was decided to substitute chrome-nickel steel No. LII., and the trouble at once ceased. Instead of the product No. LII., the material No. LIII. is, of course, a good advance, but it would be ridiculous to double the cost of material if the lower-priced product is good for the purpose under consideration.

This question of cost is certainly a most complicated and on the whole serious matter, because the cost of a car seems to be an easy thing to increase, and good practise ceases when dividends "balk." The good resolves of the designer may far exceed the ideas of the managing director, and after all purchasers are only entitled to what they pay for. This does not imply a license to use material that will not serve a given purpose at all, but it does mean that exceeding the actual necessities will hardly do.

The question of allowable weight should receive some attention just at this time, because weight and speed are the factors that must settle all questions of material, as regards both quantity and quality, assuming, of course, that designs are in accord with correct principles. It is not always the case that the latter are satisfactory, but such mistaken notions will be narrowed down by the law of evolution. Figure 2 is an illustration of just such a case and represents the end of a crankshaft on which a planetary change-speed gear was stuck. A large number of cars were put out with this feature and a considerable percentage of them must have given trouble, for every one that came to the author's attention broke at the same place.

The law of evolution took care of this matter because subsequently the maker changed the design, but the law has not settled this case yet, for the material must be changed as well. The

design was faulty, as the shoulders were sharp, whereas they should have been rounded. The question also enters into this matter, for if chrome-nickel steel or some other good alloy steel were used there would have been no need to increase the size and the weight after numerous customers were made sad by their purchase. True, the shoulders should be rounded in any event, but alloy steel, even with sharp shoulders of the diameter given in Figure 2, would transmit the power of the motor used and have a large margin to spare.

In general, weight is deplored because of the effect of weight on pneumatic tires, but it is equally a disadvantage from every other point of view. The effect of weight is rendered potent when power enough is provided to create speed; in general, it will be possible to compare weights and speeds as follows:

$$\begin{aligned} (1) & 88^2 \times 4,000 \\ & \quad \quad \quad = 480,923 = E. \\ & 2 \times 32.2 \\ (2) & 44^2 \times 2,000 \\ & \quad \quad \quad = 60,124 = E. \\ & 2 \times 32.2 \\ (3) & 22^2 \times 1,000 \\ & \quad \quad \quad = 7,515 = E. \\ & 2 \times 32.2 \\ (4) & 11^2 \times 12,000 \\ & \quad \quad \quad = 22,546 = E. \\ & 2 \times 32.2 \end{aligned}$$

E=Energy of impact, neglecting some minor friction considerations.

- (1)=Standard touring car at one mile per minute.
- (2)=Light touring car at half a mile per minute.
- (3)=Small electric runabout at one-quarter mile per minute.
- (4)=Large truck at one-eighth mile per minute.

The energy of impact is a certain measure of the stresses speed will engender in the parts, but to render such a comparison of value the static moments must be adjusted to suit the respective cars. In other words, a 12,000-pound (gross) truck requires axles of a greater section than a 4,000-pound touring car because the static load is 12,000 pounds instead of 4,000 pounds, but the



materials would not have to be so fine because the impact moment of 12,000 pounds at 7 1/2 miles per hour is only 22,546 foot pounds, whereas the energy of impact of 4,000 pounds at 60 miles per hour would be 480,923 and $\frac{480,923}{22,546} = 21.33$ ratio in favor of the truck.

This is not to say that trucks may be built of materials over twenty-one times inferior to those now used in touring cars, but it does mean, that material that is as good as possible being used in trucks, it should be twenty-one times better for touring cars.

In deciding upon the quality of material to use it is necessary to fix the speed, because the speed factor of the moment of impact is a square value. If this matter were to receive its due measure of serious consideration, builders of cars would not be

so anxious to increase horsepower, as some of them are wont, although the purpose here is to state effect and not to advocate the illumination of causes. In a general way the effect of increasing the power is most disconcerting because it increases the impact without increasing the quality of the material. Before dropping this phase of the subject it may not be amiss to make a comparison on the basis of the change required in the quality of material if power be increased.

For the sake of comparison, assume a car of carbon steel with a gross weight of 3,000 pounds and an attainable speed of 40 miles an hour, which would be a reasonable expectation with a 25-horsepower motor. Such a car would, in all probability, be generally satisfactory in carbon steel, excepting the crankshaft and maybe the gears, which parts could be of alloy steel without materially increasing the cost of the car. Now put in a 50-horsepower motor, which, of course, would weigh 50 per cent. more than a 25-horsepower motor, and as a reasonable expectation the speed would go up 50 per cent. To keep the weight at 3,000 pounds alloy steel would have to be resorted to.

The result of such a change would be an increase in speed from 40 to 60 miles an hour and the stresses in the materials would go up enormously, as can be gleaned in a moment, because:

$$\begin{aligned} (1) \quad & \frac{58.66^2 \times 3,000}{2 \times 32.2} = 160,295 = E. \\ \text{and} \\ (2) \quad & \frac{88^2 \times 3,000}{2 \times 32.2} = 360,745 = E. \end{aligned}$$

Taking into account the reduced sections of strain members to keep the weight constant at 3,000 pounds as before fixed, and the ratio of the impact (1) to the same moment (2), it would indicate a decided demand for alloy steel, because:

$$\frac{360,745}{160,295} = 2.25 \text{ ratio against carbon steel.}$$

Taking into account the necessary decrease in the alloy steel section to make allowance for the desired decrease in weight, it is reasonable to expect that the elastic limit of the alloy steel should be at least three times that of the carbon steel, taking into account an elongation common to the two grades of steel.

If carbon steel possesses an elastic limit of say 30,000 pounds per square inch, which is a fair average for the usual product, then an alloy steel with an elastic limit of 90,000 pounds would satisfy the conditions of the example of the moment. But the alloy steel with the elastic limit so fixed should have an elongation substantially equal to that of the carbon steel displaced; moreover, the contraction should be from two to three times the elongation, preferably the latter.

It will be observed that the alloy steel, under the conditions set down, will have all it is capable of doing to hold out for a reasonable period of time, and this fact should prove very disconcerting to the users of inferior carbon steel products who are wont to claim that chrome-nickel steel is a wholly uncalled-for refinement.

It might be said, if car-

bon steel will do for a 3,000-pound car, powered to run at 40 miles an hour, why not be satisfied with carbon steel and 40 miles an hour? But the author does not hold that carbon steel, 3,000 pounds and 40 miles an hour will make as good a proposition as alloy steel, 3,000 pounds and 40 miles an hour. Moreover, it is plain to be seen that the carbon steel car would be comparatively an inferior product at any weight and speed. Thus far all attempts to fix upon the materials best for the purpose were based entirely upon the relation of stress to strain, but there is one reason alone that absolutely dictates not only low weight, but moderate speed, and that is tires.

There is no grade of material too good to use in automobiles, if it will reduce weight, provided power is reduced so as to maintain a constant speed and thereby reduce the cost of tire maintenance. It is impossible to say just what are the laws that hold for tires, but it is reasonable to assume that low speed and light weight are important factors in the life of the tire, although good roads must be taken into account as an equally important factor. Assuming a given size of tires, a good road and fair conditions of operation, and it will be possible to fix upon tire relations with a fair degree of accuracy about as follows:

AT A CONSTANT SPEED.

Weight of Car.	Life of Tires.	Speed of Car.
4,000	12.5	40
2,000	25	40
1,000	100	40

If the car be run until the tires wear out—in other words, tire "rot"—is a separate matter not taken into account here. The above relation is a strong argument for fine materials, provided the weight of the car is cut down by their use. If, on the other hand, the reduction in weight is attended by an increase in speed, the advantage is of the *minus* order, for the increase in speed is attended by an increase in tire depreciation, which is to be guarded against. In all probability speed affects tires in excess of a ratio represented by the velocity squared, and the life of the tire will be affected at least in proportion to the square of the velocity. Taking this as a basis, it will be possible to view the speed phase of the question in another light, assuming that a constant power, equal roads and a decrease in weight would result in an increase in speed.

AT A CONSTANT POWER.

Weight of Car.	Speed of Car.	Life of Tires.
4,000	40	12.5
3,000	53	9.25

Angle Wheel Base	Wheel Base														
	90	92	94	96	98	100	102	104	106	108	110	112	114	116	
35	16'10	17'2	17'6	17'9	18'	18'3	18'6	18'10	19'1	19'4	19'8	20'	20'3	20'6	
36	16'6	16'10	17'2	17'5	17'8	17'11	18'2	18'5	18'8	19'1	19'5	19'8	19'10	20'1	
37	16'3	16'6	16'9	17'1	17'4	17'7	17'9	18'	18'4	18'7	18'10	19'2	19'5	19'8	
38	15'11	16'3	16'6	16'9	17'	17'3	17'5	17'8	18'	18'3	18'6	18'9	19'	19'3	
39	15'7	15'10	16'2	16'5	16'8	16'11	17'2	17'5	17'8	17'11	18'2	18'5	18'8	18'11	
40	15'3	15'7	15'10	16'1	16'4	16'7	16'9	17'	17'3	17'6	17'9	18'	18'4	18'7	
41	15'	15'3	15'7	15'10	16'1	16'4	16'6	16'9	17'	17'2	17'5	17'8	18'	18'3	
42	14'8	15'	15'3	15'7	15'10	16'	16'2	16'5	16'8	16'11	17'2	17'5	17'8	17'11	
43	14'6	14'9	15'	15'3	15'6	15'9	15'11	16'2	16'5	16'8	16'10	17'1	17'4	17'7	
44	14'4	14'6	14'9	15'	15'3	15'6	15'8	15'11	16'2	16'4	16'7	16'10	17'1	17'4	
45	14'1	14'4	14'6	14'9	15'	15'3	15'5	15'7	15'10	16'1	16'4	16'7	16'9	17'	

TABLE F.—Steering radii for various lengths of wheelbases. This table refers to a portion of the text of Chapter I which has been necessarily omitted owing to lack of space.

CHEMICAL COMPOSITION			
CARBON	TOTAL	0.25	
	COMBINED	0.25	
	GRAPHITE		
	FERRITE		
	PEARLITE		
PHYSICAL PROPERTIES	EX.	PER CENT	25
	CO.		55
	PROOF	DIAM. "	0.50
		LENGTH "	2.00
	FRACTURE		D. 5.100
TREATMENT	RATING	U.	87.5
		H.	6

SUBJECT: NICKEL STEEL
 NUMBER: LXXXIV MARK: SPEC.
REGULAR PRODUCTION.
 NEW YORK, 4-17-07

MUCH USED FOR CRANK SHAFTS AND OTHER PARTS OF RESPONSIBILITY.

THIS PRODUCT WHEN FREE FROM "PIES" AND "SEAMS" WHICH IS BY NO MEANS A MAJORITY CONDITION, SERVES EXTREMELY WELL IN MEDIUM POWERED MODERATE SPEED CARS FOR PARTS OF RESPONSIBILITY.

UNDER SKILLED TREATMENT NICKEL STEEL RESPONDS TO GOOD ADVANTAGE, BUT IT IS A MOST UNCERTAIN PRODUCT IN UNSKILLED HANDS.

IT IS NOT IN ANY SENSE EQUAL IN QUALITY TO CHROME NICKEL STEEL SEE LXXXIII FOR THE RESULTS OF SKILLED TREATMENT.

CHEMICAL COMPOSITION			
CARBON	TOTAL	0.204	
	COMBINED	0.204	
	GRAPHITE		
	FERRITE		
	PEARLITE		
PHYSICAL PROPERTIES	EX.	PER CENT	25
	CO.		64
	PROOF	DIAM. "	0.50
		LENGTH "	2.00
	FRACTURE		D. 5.0
TREATMENT	RATING	U.	60.75
		H.	9.72

SUBJECT: CHROME NICKEL STEEL
 NUMBER: LIII MARK: SPEC.
FROM: FELIX BISCHOFF DUIS-
BERG-RHINE NEW YORK, 4-17-07

USED FOR EXTREMELY IMPORTANT PARTS, REQUIRING MUCH FORGING. WILL NOT HARDEN ON QUENCHING EVEN FROM A HIGH TEMPERATURE BUT CEMENTS WELL. THIS SOFT GRADE OF CHROME NICKEL STEEL CAN BE EXPANDED INTO REAR SPROCKET WHEELS, UP TO SIXTEEN OR MORE INCHES IN DIAMETER, AND MAY BE FORGED AT 1050°C. WHICH IS A FAIRLY HIGH HEAT AT WHICH TO FORGE ANY ALLOY STEEL. THE TOTAL OF THE METALLOIDS - 0.409% FOR SILICON, SULPHUR, PHOSPHOROUS AND MANGANESE IS VERY LOW.

Since the materials entering into the construction of automobiles are so dependent upon speed, to conclude this portion of the material question without fixing upon the attainable speeds would be an oversight. Table C will serve the purpose extremely well and gives other valuable data besides. This table was published in the *Horseless Age* last year to illustrate the fact that the extravagant claims of speed on the part of motorists are rarely borne out in fact. In concluding this part of the subject there is one thing that cannot be overlooked, and that is a speedy car on a level, hard road does very little damage to itself, but

the same car on a bad road, in the hands of a careless driver, can scarcely survive unless the materials are suitable. Speed, then, and good materials must go together, and if inferior materials must be used they belong in low-powered cars, in which event a little extra weight is a matter of no serious moment if the tires are big enough to carry it.

EDITOR'S NOTE.—Owing to space limitations much of the data referred to by numbered tests, to which a special chapter is entirely devoted in Mr. Fay's work on materials, has necessarily been omitted.

TABLE C.

SPEED TABLE—35 HORSEPOWER MERCEDES, 1906
 REVOLUTIONS OF THE MOTOR—1,100 PER MINUTE

No. of Teeth of Sprocket Wheel.	17		18		19		20		21		22	
Speed	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade
One.....	11.14	22.5	42.1	21	12.7	19.6	13.4	18.6	14	17.7	14.6	17
Two.....	24.6	8.3	26.1	7.5	27.4	6.9	28.0	6.3	30.5	5.7	31.7	5
Three.....	32	5.2	34	4.5	35.8	3.8	37.6	3.25	39.5	2.9	41.4	2.5
Four.....	41.6	2.6	44.1	1.76	46.6	1.4	49.1	1	51.6	0.3	54.1	...
REVOLUTIONS OF THE MOTOR—1,200 PER MINUTE												
One.....	12.4	22.5	13.2	21	13.9	19.6	14.6	18.6	15.3	17.7	16	17
Two.....	26.8	8.3	28.3	21	29.9	6.9	31.4	6.2	33.3	5.6	34.5	4.9
Three.....	34.9	5	37	7.5	39.9	3.6	41	3.1	43	2.7	45.1	2.3
Four.....	45.4	2	48.1	4.3	51	1	53.5	0.5	56.9

In the calculations of this table the air resistance for the complete car, with touring coach work and four passengers, is taken into account, the total weight being 3,760 pounds. For cars with a heavy body or a canopy top the speeds are smaller, corresponding with the greater weight. The cars are usually furnished with sprocket wheels of 18, 20 and 22 teeth. Sprocket wheels of 17, 19 and 21 teeth are furnished instead of the standard wheels, if so desired.

SIMPLEX 30 HORSE POWER TOURING CAR

Mileage Table

No. of Teeth in Driving Sprocket	23		25		27		29	
Speed	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade	M. P. H.	% Grade
One.....	10	25.9	11.5	22.6	13.45	18.5	15.94	15.18
Two.....	13	19.5	18.5	12.65	22.10	9.8	26.25	7.35
Three.....	21	10.5	26	7.4	34.425	4.4	41.31	2.52
Four.....	37	3.65	41	2.62	47.18	1.25	54	Level
Reverse.....	8	20.6	8.7	20.1	9.39	27.1	11.25	22.3

This table of speeds and gradient is based upon the conditions of a maximum weight of the car and its burden of 3,760 pounds, a level, hard roadbed, no wind, and the car in good working order.

THE SELECTION OF A PROPER LUBRICANT

By ROGER B. WHITMAN.

IN the early days of the automobile industry a manufacturer was satisfied if his car could be depended on to cover fifty miles without a halt, and points that are now considered to be of paramount importance were entirely overlooked in comparison with the necessity for producing an engine that would run. With the advance in automobile construction has come a constant improvement of detail; until at the present time the designers are giving prominence to points hitherto passed over as too trivial to consider. Improvements in lubricating systems have been marked, for the proper oiling of the various bearing surfaces was early recognized as being essential to the life of the mechanism, but too little attention has been accorded to the selection of the lubricants to be used in them. The owner of a car is usually under the necessity of accepting the statements of the supply man, buying the oil that is most strongly recommended, and, knowing little of the subject himself, he takes for granted that what he gets is the best that the market offers.

As a matter of fact far more depends on the choice of an oil than is generally supposed, as a lubricant for use in the cylinder of an internal combustion engine must possess certain characteristics in order that the engine may deliver its full power with the least possible wear. To appreciate this it is necessary to understand something of the service that a lubricant is required to give and the way that it does its work. Primarily, the function of a lubricant is to interpose a film between the two surfaces of a bearing, separating them, and acting in a manner similar to a ball bearing. This simile to a ball bearing is not so extreme as it may seem to be at first sight, for the particles of oil may be considered as balls rolling between the two surfaces. Without this film of oil the friction between the surfaces would generate heat, and as heat causes expansion the binding of the bearing would be the result. The first requisite of an oil is its ability to keep the two surfaces of a bearing separated; in other words, it must be of such a character that its particles will be capable of resisting the tendency to squeeze out, caused by the pressure on the bearing. This characteristic, which enables the oil to resist an attempt to separate its particles, is cohesiveness, or, technically, viscosity. The greater the viscosity of an oil the more its particles will cling together and resist the pressure of the bearing that tends to separate them and squeeze them out. The viscosity of gasoline and kerosene is almost nil as compared with that of heavy oil, and they would run out of a bearing as fast as they were poured in. It is this characteristic that determines the difference between the grades of light, medium and thick oils, and the selection of one of these depends on the service demanded, a bearing that supports a great weight requiring a heavy oil of high viscosity, in distinction to a bearing carrying a light load, that may be fed with a thin oil.

An oil that forms a film between the surfaces of a bearing operating at the ordinary temperature of the atmosphere is doing all that can be expected of it, but if the bearing is normally at a high temperature another element must be reckoned with. When any oil is heated it becomes thinner, and the first effect of this is the reduction of the viscosity; its particles will be rendered less cohesive. This need not be considered in the selection of a lubricant for the change speed gear, wheels and axles or similar parts of an automobile, for if these are properly designed their temperatures should not vary from that of the atmosphere to any great extent. A much more complex problem is presented in the proper lubrication of the pistons and cylinder walls of the engine.

The intense heat in the cylinder at the moment of combustion imposes a severer duty on the lubricant than can be duplicated elsewhere, and no oil can be made that will not eventually

be consumed, passing off with the exhaust. To lubricate the piston and cylinder is similar to supporting on ball bearings a load so heavy that the best balls will ultimately be crushed, and the necessity of constantly supplying new balls to take the place of those destroyed. The better the material of which the balls are made the longer they will resist the crushing action of the bearing, and, similarly, the higher the burning point of an oil the longer it will continue to perform its duties as a lubricant before the heat decomposes it. The processes of giving an oil a high burning point are well understood, and there are many brands on the market that in this respect offer all that can be desired.

A further and more important distinction, however, must be made regarding the oils that will burn and pass away, leaving the least possible residue. The carbon that enters largely into the composition of oils will, on the destruction of the oil in the cylinder by the heat, enter into combination with any oxygen that is present and pass off as CO_2 , but with a properly proportioned mixture the amount of free oxygen present in the cylinder is very small, and the carbon is therefore deposited on the walls of the combustion space. The automobilist knows the result of this only too well, and has had his experience with fouled spark plugs, gummed piston rings, stuck valves and the other effects of this heavy carbon deposit. The parallel of the ball bearing supporting the excessively heavy load may be again referred to. If the balls are such a material that when crushed they will be reduced to powder, there will be little interference with the operation of the bearing, but if they break into fragments these will remain in the races and bring the remaining balls to quick destruction. Obviously the lubricant that resists disintegration by the heat for as long a time as possible, and in decomposing leaves the least carbon deposit, will give the best result in thorough and efficient lubrication of the piston and cylinder walls of an internal combustion engine.

The ability to reduce the quantity of carbon contained in a lubricant is the result of a long series of tests and experiments that have been made to prove a theory, but before going into the effects it will be well to understand something of the processes of refining.

The crude oil, petroleum, is placed in a retort and heated gently to drive off the more volatile elements, and these when condensed are known as rhigolene and chimogene. A higher temperature volatilizes the various grades of gasoline and kerosene, an increased heat driving off the lightest grade of lubricating oil. A further increase of temperature will volatilize the heavier oils, but as the process continues more time is required to free them, and the expense of production becomes greater. For this reason the oil manufacturers prefer to treat the residue left in the retort by other methods that separate the various grades of heavy oils and greases. While the oils that are distilled contain carbon, it is in less proportion than is found in the oils procured from the residue, and therefore the distilled oil, if the process is continued sufficiently to obtain the necessary viscosity, will be preferable to the other.

Numerous tests and experiments have been conducted on samples of the distilled oils as well as those obtained from the residue, and consisted of extended processes of filtration, each filtration resulting in the production of an oil that was considerably lighter in color than it was previously. The viscosity and burning point, as well as the other characteristics, remained unchanged. These samples of oil, in which the process of filtering had been continued until nearly all of the color was removed, were burned in comparison with samples of the same oils unfiltered. The results were of great interest, for in each case the residue of carbon was decreased, the decrease being in proportion

to the loss of color. The samples filtered to such an extent that they were nearly colorless left a residue of carbon so slight as to be negligible.

A knowledge of the fact that carbon and color in an oil are practically synonymous is of advantage in the selection of an oil, but it should not be forgotten that a thin oil will be of lighter color than a thick. The first essential is the selection of an oil that has sufficient viscosity, and of the several brands that comply with this requirement, and have a sufficiently high burning point, that of the lightest color should be chosen. On test it will be found to contain a smaller proportion of carbon, and the results from its use will therefore be better than would be obtained with an oil of darker color.

The proper viscosity for the oil is determined by the grade of iron used in making the cylinders, and in the number, fit and location of the piston rings. A very close grain iron, which takes a smooth finish, requires a thinner oil than a rougher iron, for which an oil of higher viscosity is required to maintain a tight fit. The manufacturers' hand books furnish information as to the viscosity and this should be used until experience proves that a change will be beneficial.

RAPID INCREASE OF AMERICAN AUTO EXPORTS.

Not only are the exports of American automobiles increasing apace, the average gain being close to fifty per cent. annually, but the average price of the cars exported is also increasing. During the month of May, 1907, 281 cars of an aggregate value of \$618,018, together with \$47,432 worth of automobile parts, were sent abroad as compared with but \$484,541 in all in the same month a year ago. While the average increase does not reach fifty per cent., many of the individual items show a gain of almost 100 per cent., such as the figures in the case of the United Kingdom, which rose from \$138,109 a year ago to \$235,751, very favorable increases also being manifest in the case of France, Italy, Mexico and British North America. The extent of the gain may be better appreciated by a comparison of the totals for the period of eleven months ending with May in the past three years, which are \$2,167,744 for 1905, \$2,957,748 for 1906 and \$4,770,187 for 1907. The detailed report follows:

Automobiles and Parts of Automobiles...No.	May		Eleven Months Ending May	
	1906	1907	1906	1907
Automobiles.....	281	281	281	281
Parts of.....				
Exported to—				
United Kingdom...	138,109	235,751	754,286	1,210,672
France.....	55,221	85,084	225,822	444,032
Germany.....	22,366	16,580	70,625	110,136
Italy.....	17,770	37,500	245,358	243,010
Other Europe.....	35,397	10,879	158,630	227,797
Brit. North America	120,159	150,079	556,009	1,020,411
Mexico.....	48,690	69,098	341,692	762,650
West Indies and Bermuda.....	12,588	15,453	237,264	100,005
South America.....	15,495	14,300	77,275	184,570
British West Indies.	3,651	840	34,697	33,926
British Australasia.	7,467	13,287	155,591	202,741
Other Asia and Oceania.....	5,636	14,585	49,732	91,561
Africa.....	1,479	140	28,404	8,813
Other countries.....	513	74	13,363	12,254
Total automobiles and parts of...	\$484,541	\$665,450	\$2,957,748	\$4,770,187

A NEW COMBINATION BALLOON-AEROPLANE.

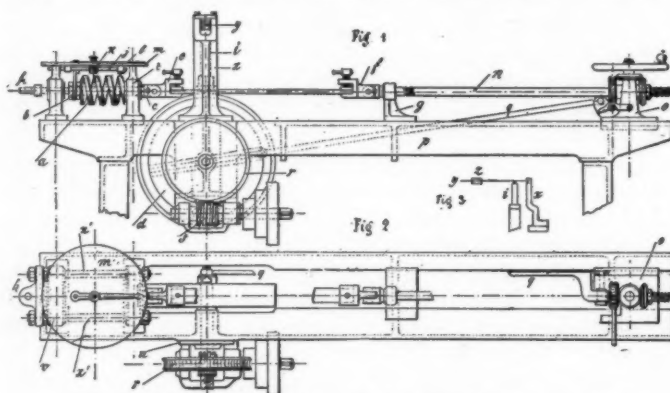
A flying machine which combines the principles of the dirigible balloon and the aeroplane is being experimented in New York City by Frutz H. Grawert, a German inventor. Only a small working model has made its appearance up to the present, but the inventor is convinced of the soundness of the principles of his aeronautomobile—as he has named it—and promises wonderful performances in the near future. In the model there are four cylindrical gas bags with pointed ends, the two center bags being placed side by side and the remaining pair in front and in the rear in the same plane. A light chassis is suspended under the gas bags and on the center of it is placed the motor, in the present case of clockwork, driving a propeller in the rear. The forward and rear gas bags being attached to pivoting frames, they may be moved to control the course of the machine.

FRENCH MACHINE FOR TESTING TIRE FABRICS.

Notwithstanding the enormous quantities of rubber, tissues and fibers of various kinds in daily use, mechanical appliances for testing them are singularly rare, a state of affairs in striking contrast to what pertains in other branches of the technical world. Chemical experiments have done good work in providing data for the pneumatic tire manufacturer, but good as they are in their own domain they are altogether insufficient in that they have no relationship with the mechanical oscillations which a tire fabric has to undergo in actual use. The only method of scientifically testing tire fabrics so as to reveal the actual working strains they are able to support is by means of a dynamometer.

A machine for this purpose has been constructed by a French engineer, consisting, as will be seen from the illustration, of a solid castiron table (*p*) with its upper surface planed smooth and standing on two stout legs. On the table are to be found the two principal organs of the dynamometer, the apparatus for producing the efforts and the apparatus for measuring them.

For the recording instruments the inventor has abandoned cumbersome balance levers in favor of a special steel spring, which is equally accurate. In the P. B. dynamometer the spring *a* is mounted on a shaft bearing at one end the jaws *e* for holding the material to be tested, and, secured between a couple of nuts, the finger *b* operating a rack *j* and meshing with a vertical



PLAN OF P. B. DYNAMOMETER FOR TESTING TIRE FABRICS.

pinion *k*. In the axis of this pinion is fixed a needle *l* moving in front of a graduated scale *m*. On the breakage of the material under test the spring recoils, but leaves the needle motionless, thus the charge at which rupture took place can always be read. The value of an instrument of this nature depending entirely on its accuracy, the inventor has incorporated a special apparatus by which its veracity can be tested, and which is the subject of a separate patent.

The oscillating portion of the apparatus consists of two pieces, *g* and *o*, which may be attached to or released from the table at pleasure. To the lower portion of *o* is attached a connecting rod *q*, operated by an eccentric. The two slides being free, and the machine put in motion, a series of tractional efforts can be brought to bear on the material under test. Power is applied by means of a motor connected to one of the three pulleys on the driving shaft operating the eccentric through a worm gear.

The material to be tested is secured by the two jaws *e* and *f*, as shown in Fig. 1. The jaw *f* is united to a slide *g*, which in turn is connected to *o* by means of the screw *n*. By means of a horizontal flywheel and bevel gears, a simple tractional effort is applied to the fabric. Tractional tests at various temperatures, plasticity tests, cutting tests and testing of fabrics under rapidly repeated pulling strains can be carried out on the P. B. dynamometer, data being recorded by the needle in each case. Though particular mention has been made of the use of the machine for rubber and tire fabrics, it is applicable to the whole range of tissues, cordage, paper, celluloid and other similar materials. A. D. Cillard Fils, 49 Rue des Vinaigriers, Paris, France, is the constructor of the P. B. dynamometer.

LETTERS INTERESTING AND INSTRUCTIVE

Why Are Two-cycle Crankcases So Small?

Editor THE AUTOMOBILE:

[812.]—I am an interested follower of developments in the automobile, and have often wondered why the two-cycle engine has not come in for more attention at the hands of automobile builders, if it is all that some of its ardent advocates claim for it. However, this is neither here nor there; I am more or less familiar with the principles on which both the four and two-cycle types of motor operate, though I have never had much opportunity to inspect models of the latter very closely. But I have noticed that the two-cycle motor is made with a very queer looking form of crankcase, as compared with the four-cycle, and would like to know the reason for this. I saw a four-cylinder, two-cycle recently, and it seemed as if each cylinder were provided with a separate crankcase of its own. I would like to ask if this is the case, and why?

Chillicothe, O.

Two-cycle motors as at present used are designed to use crankcase compression—that is, the charge is drawn directly into the crankcase on the upstroke of the piston, through a port in the case of what is known as the three-port type, and through a check valve in a two-port engine, now not very much used. On the downstroke of the piston the charge then in the crankcase is compressed to four or five pounds to the square inch, and just at the moment it reaches its maximum compression the inlet port in the side of the cylinder is uncovered by the descending piston and the charge rushes through a by-pass into the combustion chamber, being there again compressed by the next upward stroke, which forms the regular compression portion of the cycle in this type of motor.

It will be plain from this that in a multi-cylinder two-cycle engine, each cylinder is really an independent unit, except, of course, that the same carbureter supplies the mixture for all. And it will also be evident that in order to obtain the necessary compression the size of the crankcase must be restricted in order that its volume may not greatly exceed that of the combustion chamber of its cylinder. The necessity for making the crankcase small as well as for maintaining the section of it corresponding to each cylinder, air tight, accounts for the peculiar shape of this essential you have noticed on two-cycle motors, as compared with four-cycle motors in which no such special conditions exist.

Has an Original Idea for a Change Speed Gear.

Editor THE AUTOMOBILE:

[813.]—I am a reader of "The Automobile" and would like a little information on transmission. I have an idea of a transmission where the gears always stay in mesh and do not need to be shifted, as it works automatically. I am a mechanic and have followed automobiles for the past five years, and have never seen or heard of anything like mine. Can you give me any information about this? If my idea is original, I would like to have it patented.

Pittsburg, Pa.

G. C. P. M.

Without having further particulars as to the details of your invention we can naturally not give you a very definite reply regarding its originality or its value for use on automobiles. Under the circumstances, the only information that we can give you is that quite a number of change speed mechanisms, usually termed "transmissions," though somewhat erroneously, as the transmission includes a number of other essentials, in which the gears are constantly in mesh, have been invented and patented and some of them are in successful use on American automobiles today. With a few exceptions they have not proved entirely successful and the type most generally used not only calls for the sliding of the pinions, but also their shifting by hand. However, an automatically operating device of this kind was recently brought out in England, where it created quite a stir. For full particulars write the *Autocar*, London, requesting that one of the back numbers containing this description be forwarded to you. This is the only automatic type we know of.

Who Was Right—Motorman or Motorcyclist?

Editor THE AUTOMOBILE:

[814.]—I have noticed in a recent issue of "The Automobile" a discussion of trolley car and automobile accidents illustrated with a number of diagrams. Enclosed you will find a sketch depicting the circumstances connected with an accident that happened to me on the 22d ult. in Rye, New York. As will be plain from this the situation was that of an intersecting cross street on which there was a trolley road running at right angles to the street that I was on, but making a curve into it at the corner I had to pass. I was riding along at an ordinary rate of speed and when I reached the spot indicated by the cross in the lower left-hand corner, I saw the trolley car, which was then in the position marked by the cross in the upper right-hand corner, and traveling in the direction shown by the arrow, or directly across my path. I blew my horn several times and attracted the attention of the motorman, and seeing that he was looking at me I continued on, thinking that he would stop at the corner before taking the curve in order to let me pass, or else swing completely round the curve so that I could pass on the right-hand side of the car, but instead of doing either he came to a dead stop right on the curve, as

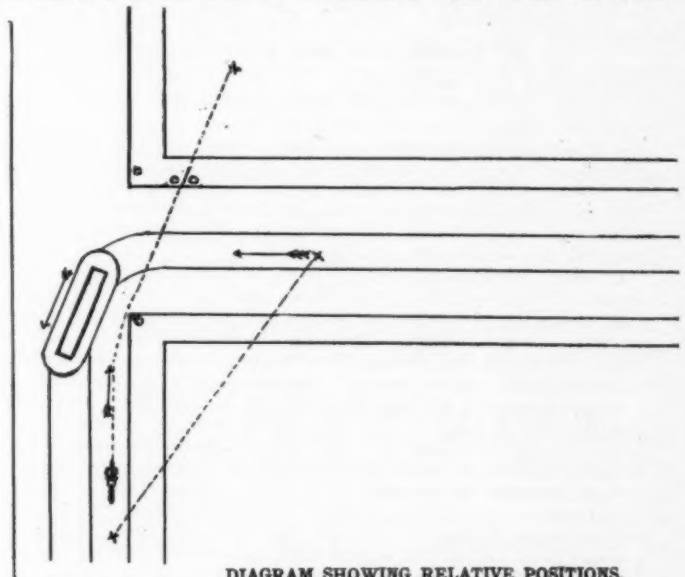


DIAGRAM SHOWING RELATIVE POSITIONS.

shown by the drawing, thus completely blocking my path. I was then going too fast to be able to take the turn at the right into the cross street, and was compelled to run straight into the curb on the opposite side, barely managing to go between the telegraph pole and tree marked by the two small circles—a space scarcely three feet in width, completely wrecking my machine, but fortunately escaping with a few bruises. I owe my escape to the good material in my machine, which is an Indian, for had the front wheel or the forks buckled when I struck the curb I would have been crushed against either the pole or the tree. I hope this may interest some of the readers of your valuable paper, and would like to ask you, was the motorman or myself to blame under the circumstances? An answer published through your "Letters Interesting and Instructive" department will be appreciated.

Rye, New York.

E. H. GALLAWAY.

There can be no doubt in the mind of anyone who reads your account of the accident from which you were so fortunate as to escape with nothing more serious than a few bruises that you were clearly to blame. While you state that you were riding at an ordinary rate of speed when you first discerned the trolley car, this hardly corresponds with your later statement that you were going too fast to make the turn into the side street when you found the road ahead blocked by the unexpected stopping of the car on the curve. In other words, your machine was certainly not within control, considering the circumstances, as otherwise you would doubtless have been able to choose a somewhat less risky spot than the one you managed to squeeze between on striking the curb. If it was impossible for you to turn the machine at any greater angle than that indicated by the dotted

line which describes your course from the time you steered to the right slightly to avoid the car until you landed up in the field, your rate of travel must clearly have been such as to be characterized as highly dangerous under such conditions. Of course, it is far easier to analyze such situations when they are presented in black and white and time is not pressing; in reality quick action is absolutely necessary and what proves to have been poor judgment on mature thought did not appear so when an immediate decision was necessary. Under the circumstances we should think it natural to cross the tracks at the left to avoid the car before it reached the curve unless other traffic interfered, or if the speed were not highly excessive it would seem as if the easiest road to safety would have been a turn to the left after passing the tail end of the car, as shown by your sketch. There is always a great element of uncertainty about every situation of this kind, in that you can never depend upon what the other fellow is going to do, so that prudence and common sense would naturally dictate a rate of speed at which the machine could instantly be brought to a halt without damage either to it or its rider. The verdict must be against you and the lesson should prove one not easily forgotten.

An Expedient to Save Lubricating Oil.

Editor THE AUTOMOBILE:

[815].—I have noticed in an article which recently appeared in "The Automobile" a reference to the waste of lubricating oil by the average automobilist, and particularly by the professional chauffeur. As stated therein, most of this waste takes the form of leakage from the crankcase as well as the gear-set housing, and the extent to which it takes place may readily be learned by looking at the pavement or road wherever automobiles have been standing for any length of time.

It seems strange that this practise, or rather neglect, should be so general and still be noticed by so few people, for I must admit that though I have been an autoist for four years past, I never observed it particularly. Recently, however, I found that the motor of my old car seemed to be taking an excessive amount of lubricating oil, and I asked a local machinist the reason, but the only satisfaction I got was that the "motor was old," and consequently needed more oil. It has always been my impression that a motor once well worn in reality needs less oil than one that is comparatively new. I continued to throw lubricating oil away in rather generous quantities until the article referred to came to my attention, and I found that, as mentioned therein, most of the oil was being thrown out through the crankcase joints. I presume I would have noticed this sooner had I made a habit of cleaning the motor myself. I want to remedy this as well as a similar defect in the transmission case, and would like to know if any special material is necessary as a packing, and what the method of procedure is.

Springfield, O.

LUBRICANT.

There is a wide range of materials from which to cut suitable gaskets for this purpose, such as asbestos, sheet rubber, felt and the like, even manila or heavy wrapping paper having been employed for the purpose. It is easiest to make a tight joint in an old crankcase with a special rubber gasket, but the life of the rubber is cut short by its being constantly wet with lubricating oil, at the same time being subjected to the heat of the motor, which is very destructive of this material. However, a good rubber gasket would last a season out with little trouble unless the motor runs very warm. Sheet asbestos or mineral wool felted together are better materials so far as durability is concerned. Whatever the material employed, a gasket the width of the faces of the joint should be cut, making careful allowance for any bolt holes or other obstructions so that the gasket fits perfectly and lies flat in place without stretching or puckering. The only point on which care is necessary in its application is to have the remains of the old gasket entirely removed and to put the new one in place without tearing, especially if it be of asbestos.

Some Queries Concerning Dry Cells.

Editor THE AUTOMOBILE:

[816].—I would like to ask a few questions in regard to the use of dry cell batteries. I have a Ford runabout, on which I use dry cells exclusively. I use six cells to the set, battery box holding two sets. After running on these until they are a little over half

exhausted, or say 6 to 8 amperes remaining to each cell, I find that my engine will not run up to satisfactory speed, and also miss-fires very often. Is it in any way detrimental to change my wiring so as to throw all the 12 batteries on one set?

I have been doing this, and find that I get very good ignition service from the 12 cells.

On a new set of six dry cells I find that there is a total of about 12 amperes on an average. To wire up enough partly used cells to bring the total amperage up to the same amount, would I get as good service from these as I would from the new ones? If wiring these partly used cells should be discontinued, at what amperage should the cells be discarded for new ones? Any information on this subject will be appreciated.

W. A. GRAY.

Coleman, Tex.

It will do no harm to connect the two sets of six cells each in series-multiple—that is, so that the voltage of the twelve-cell battery still remains the same but the amperage or current is doubled. With your present arrangement the coil receives the amperage of one cell and the voltage of six, regardless of which set is being used; by altering the connections as mentioned after the cells have become partly exhausted, the amperage would be that of two cells, but as their output has already been practically halved by usage the result would be practically the same as using one fresh set. In fact, it is quite customary to wire up two sets of dry cells so that either may be used separately or both in series-multiple, the necessary connections being explained and illustrated in an article entitled "The Essential Elements of Electric Ignition," which appeared in THE AUTOMOBILE of the issue of February 21 last.

The service obtained from two sets of partly used cells wired up as mentioned will probably be found to be superior to that from a single set of new cells, in that the former will continue to give a uniform current output for a longer period, as they will not deteriorate quite so rapidly, due to the fact that the demand upon them for current is distributed over a larger number. Dry cells should be discarded when they no longer give satisfactory service, i. e., the motor cannot be run steadily for any length of time without missing and cannot be speeded up, though it is always well to investigate other causes of ignition trouble before deciding that the battery is at fault. It is poor practise to frequently use an ammeter on dry cells, as it simply wastes their energy to no purpose; if more attention were given to testing the amount of current being consumed by the coils and the efficiency of the contacts of the timer, there would be less so-called battery trouble and dry cells would be found to last a great deal longer.

ANOTHER TIP FOR THE BENEFIT OF No. 779.

Editor THE AUTOMOBILE:

[817].—If you will kindly allow me the space, would like to give my experience with the same trouble as No. 779. In all the engines, both automobile and marine, that have given this trouble, that have come under my notice, it has been from the same cause, i. e. too weak inlet valve springs; which allow the valve to chatter on its seat upon closing, instead of going shut and staying shut—a condition that obtains a great deal more frequently than is likely to be believed unless one starts to investigate.

In my own little machine with automatic inlet valve, the back-firing through the carbureter got so bad on one occasion that the engine stopped. I removed the spring and simply stretched it a little, put it back, and the engine started off O. K., and has been running ever since without any sign of back-firing.

Horizontal valves are much more prone to this trouble, whether automatic or mechanical, than vertical ones, especially after the stems have become worn a little through use.

Hoping that this will give Mr. J. C. Moore a "tip" as to a remedy for his trouble,

H. W. CYRUS.

Astoria, Ore.

HOW CAN THESE LAMPS BE KEPT LIGHTED?

Editor THE AUTOMOBILE:

[818].—I have been running a 1907 Oldsmobile for some time, equipped with No. 626 Solar lamps. These lamps I find impossible to keep lighted, as the slightest jar puts them out, and I have found nobody as yet who can tell me a remedy. I keep them thoroughly cleaned, but still they go out. I never have trouble with the tall lamp, nor the gas lamps. Will you be so kind as to suggest a remedy, through your query department, and oblige one in the dark?

Berkeley, Cal.

W. G. WOOD.

WREAKING REVENGE ON THE AUTOMOBILE

By W. F. BRADLEY.

ONE may be as devoid of horsemanship as John Gilpin or as innocent on matters of equine anatomy as the average deep-sea sailor and yet be fully aware that the ways of the horse dealer are wonderful and fearful. With a few centuries of experience behind him, the art of transforming in a few seconds a noble beast into a wretched hack, or of temporarily rejuvenating him so skilfully that only the expert can find traces of the operation has had time to reach its highest development.

But the horse world is not the only one in which tricks play an important part. Specialists in every branch of sport can relate similar stories of cunning and knavery. The automobile, young as it is, has not escaped the evil. Visit the headquarters of any racing team on the eve of an important contest and note with what care the machines are guarded. Watched by keen eyes all day and guarded through the darkness as tenderly as a sick child, it is evident that some terror by night or pestilence that goeth forth at noonday is feared. The terrors are not imaginary, but have a strong personality in the unscrupulous rival who would stay at nothing to enhance his own chance of victory.

Knavery in the Cross-country Race Days.

In the early days in Europe, when races were held across country from town to town, attempts to cripple a rival's machine were comparatively easy of execution and consequently of frequent occurrence. Five minutes alone with the machine in the shed where it was stored for the night and a trained hand could so weaken a powerful speed monster that it would collapse a few hours later. One of the most skilled European drivers discovered on taking over his machine on the morning of the third day that his brakes had been tampered with and that the clutch was no longer performing its accustomed duties. An hour's vigorous work and all was put in order again and the race finally won. Had the evildoer had more time or the driver been less skilled another tale might have been told. Under present conditions with races on guarded courses, begun and finished the same day, such practices are almost impossible. Before the race only picked men in whom every confidence can be placed are allowed to handle the machines, and during the event attempts at fraud are utterly out of the question. The manner in which the racers engaged in the French Grand Prix last year were guarded between the first and second day's event shows that unscrupulousness was believed to still exist. Locked in the center of a large field, with guardians watching over them and troops patrolling the entire enclosure, the precautions resembled those observed in connection with a royal palace.

When the Private Automobilist Is the Victim.

Racing is not the only domain in which the upscrupulous automobilist will display his mischievous qualities. Your private chauffeur may have angry feelings because of a sudden dismissal, and before leaving administers a dose of medicine to your valuable machine, the effects of which will only be felt when the man is out of your reach. Only a few months ago a prominent British constructor was loud in his accusations of French workmen, who, he declared, had tampered with the gear box of a machine sent across the Channel to receive a French body. How much truth and how much international jealousy existed in the matter has never been determined.

Pouring water in the gasoline is but a crude method of wreaking vengeance on a rival and one that is now abandoned to the greenhorn. A little sulphuric acid put into the cylinders through the pet cock is one of the simplest and at the same time most certain methods of placing a car out of service. In a few minutes the acid has done its deadly work and the owner may spend hours in vain conjectures as to the cause of a sudden loss of

compression. Motorcycles with exhaust at the end of the strokes are an easy prey of the unscrupulous rival with a syringe loaded with sulphuric acid. A handful of emery powder dropped in the lubricating oil has apparently no ill effects on the health of the machine, but in an hour or two there will be play in every part and damage done which can only be remedied by a thorough overhauling of the machine.

Not Dangerous, but Exceedingly Annoying Fakes.

There are a score of methods by which a revengeful chauffeur can immobilize an automobile with little fear of detection and with still less danger of criminal prosecution; without doing any material injury to the machine he can give to his rival hours of weary searching. A small wooden plug pushed into the gasoline supply pipe will cause a breakdown which will disgust a driver with Job-like patience. Even more annoying is a short circuit caused by carefully cutting the insulation, severing the wire and closing all up again so as to avoid detection. An experienced driver, victim of such a scheme, knows immediately that he has a short circuit, but long experience will not remove the necessity of examining every inch of the wiring and searching with minute patience for hours before the fatal spot is discovered. Another easy one is to slacken the clutch; at first no ill effects are experienced, but immediately a grade of any difficulty is attempted trouble begins. A dozen balls or a couple of bolts dropped into the gear box reduce the most magnificent set of gears to a ragged condition before the operator of the car has time to realize that he is the victim of an evildoer.

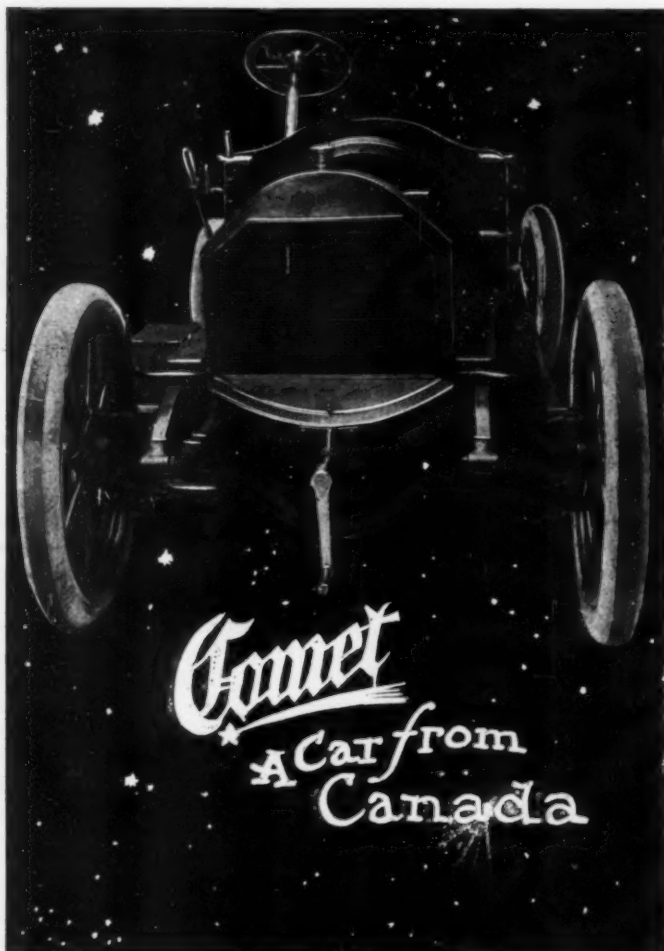
Procedures of the Deep-Dyed Villain.

More to be feared is the revengeful fiend who, not content with disabling a machine, will place the lives of the occupants in danger. With a chisel and a hammer the cables operating the brakes will be partly severed. The first time it is necessary to use them, perhaps at a critical moment, they snap like a violin cord. More dangerous still are attacks on the steering gear; the withdrawal of a cotter pin, the slackening of a nut and the villainous deed is done. One case at least is on record of the steering gear having been filed. After the accident, which, fortunately, had no serious results, the traces of the criminal tool were readily discovered. In the same category may be classed attentions to the road wheels which transform these organs into veritable death traps.

Fortunately there is a large amount of amour propre among the corporation of chauffeurs, and for one unkind action a thousand helpful deeds could be recorded. The average man hates to injure a machine as much as he dislikes to inflict injury on an animal. Where, however, it is feared that the knave has been at work an acquaintance with the methods he is most likely to adopt is exceedingly useful and may be the cause of preventing much annoyance, costly repairs, or even of preserving human life.

A. A. A. NATIONAL LAW WOULD PREVENT THIS.

ATLANTA, GA., July 8.—The Chattanooga autoists who have been made defendants in the suits for alleged violations of the automobile laws of Catoosa County, Ga., will probably require requisition papers before they will go to Ringgold and make bond for their appearance in the superior court of Catoosa County next August. It is understood that Sheriff Pendleton's mission to Chattanooga was futile. He tried to persuade the defendants to go to Ringgold and make bond, but they are said to have told him they would do nothing of the kind. They insisted that they have violated no law and that the Georgia officers have been doing a land-office business in a fee-grabbing crusade. It is understood that the autoists will employ counsel and test the validity of the action of the officers.



CANADA has taken up the automobile in earnest and shortly is to make a determined bid for her share of the world's trade in cars, the recent show held in Montreal having demonstrated that makers over the border are waking up to the possibilities of automobile manufacture. One of the exhibits that attracted a great deal of favorable attention was that of the Comet Company, Ltd., which has been incorporated to make automobiles with a capital of \$250,000. A factory has already been erected in Montreal and actual production commenced, so that for 1908 the Comet cars will be a strong factor in the Canadian market. The plant consists of a two-story building affording 75,000 square feet of floor space, and it is the intention of the company to expand considerably in the near future.

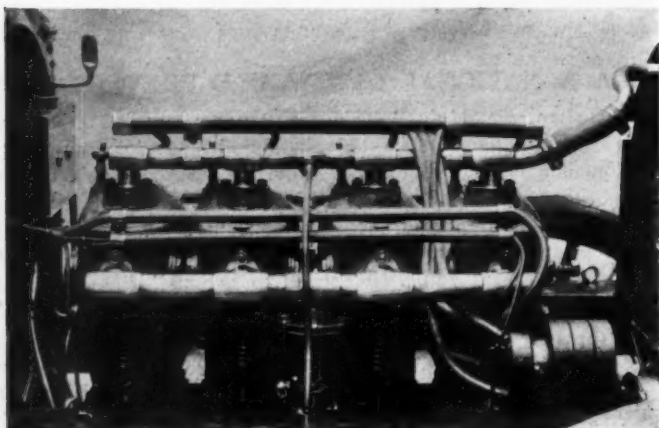
The Comet car, of which there will be two models—a 24-horsepower four-cylinder car and a 40-horsepower six-cylinder car for 1908—is the work of Berne Nadall, who has been identified with automobiling for the past decade, having been one of the charter

members of the now Royal Automobile Club, and who is also known as the inventor of the Nadall detachable tire. For the present most of the material is being imported from the Continent and is of the grade used in some of the best known European makes of cars, but it is the intention to eventually make practically everything that goes into the car, even including such parts as frames, springs, wheels and the like, generally considered the work of the specialist by even the largest builders here.

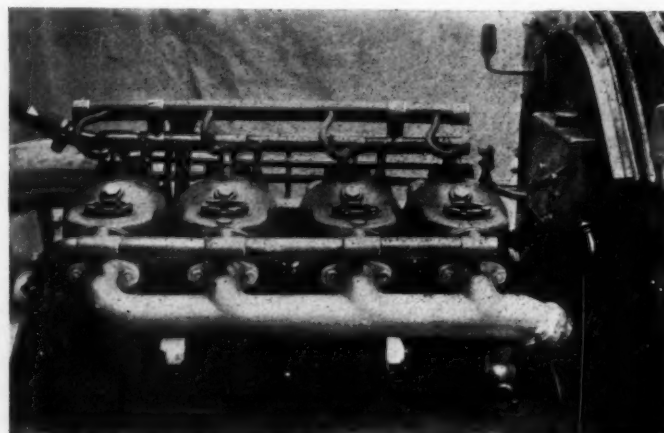
The leading model for 1908 will naturally be the 40-horsepower six-cylinder car, the cylinders of which are to have a bore of 100 mm. and a stroke of 120 mm. The cylinders are independent and the castings are imported from France in the rough. The valves are oppositely disposed and mechanically operated and the motor is designed to give its normal output at a speed of 1,000 r. p. m. Chrome-nickel steel is employed for the crankshaft, which is cut from a solid billet and is supported on large French phosphor bronze bearings. The continuous circulating system of lubrication, using the crankshaft as a well and with a single sight feed on the dash, is employed, due to its simplicity and great efficiency, while the ignition is of the high tension type, employing a Bassé-Michel magneto on one side and a synchronous system, using a single non-vibrating coil on the other, fed by a set of accumulators. A gear-driven pump feeding a tubular fin type of radiator, with honeycomb front and supplemented by a belt-driven fan running on ball bearings, constitutes the cooling system, fan-shaped spokes also being cast in the flywheel. The carbureter is patterned after French standards and is water-jacketed.

The Hele-Shaw multiple disc clutch, formed of alternate bronze and steel members, is the first step in the transmission of the power, while the change-speed gear is of the sliding type and selective operation, providing four speeds forward and the usual *marche arrière*, the direct being on the third speed, while the fourth is geared about 15 per cent. higher. All the pinions are of chrome-nickel steel, as are the gear shafts, which are supported on Hoffman annular type ball bearings. Final drive is by propeller shaft. The foundation of the chassis consists of a pressed steel frame of the standard channel section and of the latest French type; chrome-nickel steel is the material used and the frame as a whole is thoroughly reinforced. It is supported on the standard type of semi-elliptic springs, measuring 40 inches front and about 50 inches rear, supplied by Prunelle et Cie., while the rear axle is from Malicet et Blin, all bearings in the latter being of the M. & B. annular ball type. Thirty-six-inch wheels are fitted and are equipped with 920 by 120 mm. tires rear and 105 mm. front, corresponding to 43-4 by 41-4 inches. An innovation is to be found in the fuel tank, which in addition to being divided into two compartments, one of which carries 15 gallons of gasoline and the other a two-gallon reserve supply, also has compartments for a gallon of lubricating oil and a gallon of kerosene.

From the foregoing it is evident that the makers in planning their car have sought to come as near to the production of a high-class standard design of car as it is possible to make.



INLET SIDE OF COMET FOUR-CYLINDER CAR SHOWING MAGNETO.



VIEW FROM EXHAUST SIDE OF MOTOR SHOWING OIL RESERVOIR.



"WISDOM seldom comes except by experience, and it is the possession of that experience that leads us to thus preface our catalogue," say the makers of the Meteor, the Meteor Automobile Works, Bettendorf, Ia., so that while the Meteor is a new bidder for favor in the American market, it is not an experiment in any sense of the word, but an example of good standard design that is the result of ripe experience in building automobiles as well as knowing how not to build them, gleaned by close observation of the trend of construction in the past half decade or more in this country and abroad.

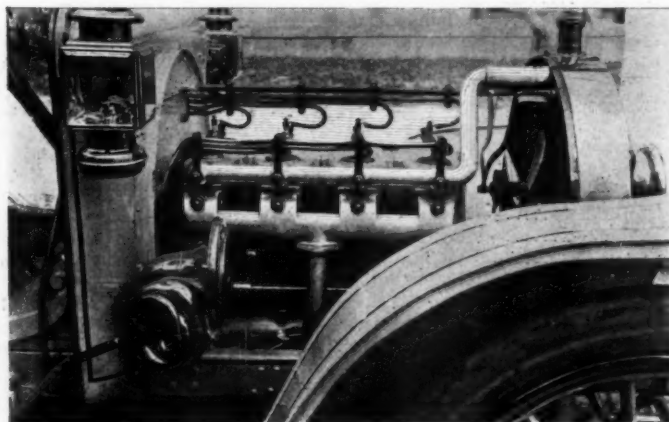
For the present but one chassis is being built, though three models are listed, a regulation touring car, a runabout with rumble seat and a runabout with turtle deck. The motor cylinders are cast from a special grade of close-grained iron imported from England for the purpose and each is an independent unit. The valves are oppositely disposed and are located in outboard valve chambers in accordance with the practise of several well-

known makers. They are all mechanically operated from two separate camshafts. The pistons are cast from the same material as the cylinders; they are fitted with three compression rings and an oil ring placed at the bottom, and in finishing are ground parallel with the bottom ring, with a slight taper at the head to compensate for the greater expansion at this point due to the fact that it comes in direct contact with the heat of the explosion. The heads of the pistons are made dome-shaped. Connecting rods are of drop-forged nickel steel and at the big ends are fitted with split bushings and babbitt bearings made adjustable and firmly held by studs and castellated nuts. The crankshaft is turned from a solid billet of chrome-nickel steel and its journals are ground to .003 inch in finishing; it is supported on five babbitt bearings of generous size. An automatic self-compensating carburetor of ample size and modern design constitutes the gas-producing device. In order to provide against the results of carelessness in winter, the sides of the water jackets of each cylinder are enclosed by thin aluminum plates, thus forming an effective provision against damage through freezing. Starting is usually accomplished from the seat on the Atwater-Kent system, but to facilitate the operation of cranking a compression release is provided, the lever of which is placed on the dash in an accessible position.

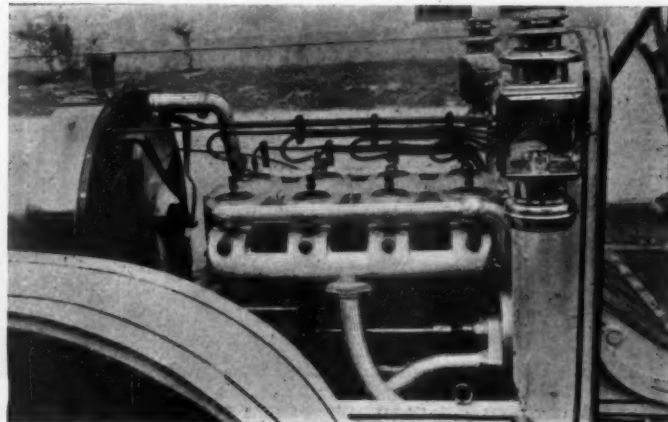
The same painstaking attention that has been paid to motor design and constructional detail has likewise been devoted to making the equipment of the power plant as fine as can be procured, which means a great deal in the service rendered by a car, as more than 90 per cent. of the trouble experienced with an automobile arises from petty defections that could be avoided at the outset by the maker. This is particularly noticeable in the case of the ignition; a duplicate set has been provided throughout, one side consisting of an Atwater-Kent single coil and distributor system to be used in connection with a set of accumulators, while the other is an entirely self-contained and independent set in the shape of a Simms-Bosch high-tension magneto. There are two sets of plugs, so that both systems are independent, those for the former being mounted in the center of the cylinder head, while those used with the magneto are mounted directly over the inlet valves, as this system generally comes in for the greatest amount of use.

A noticeable feature of merit about the power plant of the Meteor is the manner of its suspension; the motor itself and the change-speed gear and clutch really form an integral unit, which is held in the frame as such by what is termed a diamond suspension, giving six points of support—in other words, a double three-point suspension, which on account of the perfect division and distribution of the weight gives great flexibility, and this in connection with the integral feature of the combined power plant and transmission makes disalignment of any of the components of these parts a practical impossibility.

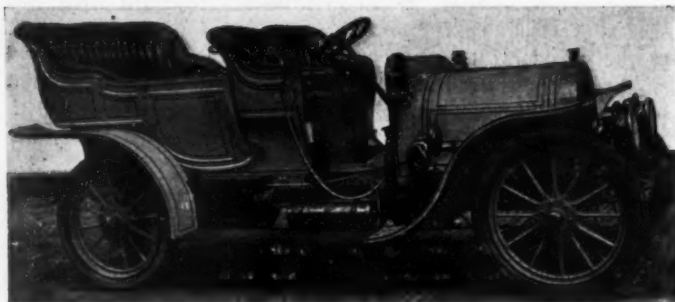
One of the special features of the Meteor is to be found in the change-speed gear of the car. It is a matter of common knowledge that the practise of sliding moving gears into mesh



SIMPLE TYPE OF INLET MANIFOLD EMPLOYED ON THE METEOR.



EXHAUST SIDE SHOWING LOCATION OF CIRCULATING PIPE.



VIEW OF THE METEOR CAR FROM THE OPERATOR'S SIDE.

goes counter to all principles of mechanics, both practical and theoretical, but, like many another thing, usage has demonstrated that theory was not more than half right and the gear set of this type has survived and been greatly improved. The makers of the Meteor, however, claim that their change-speed gear is built on absolutely correct mechanical principles and is, moreover, the only one of its kind. It provides four speeds forward, with two reverse, and is of the positive clutch, selective type, all pinions of the entire set being constantly in mesh and when on the direct drive all are idle. Both the main and jackshaft are supported on imported Hess-Bright ball bearings of generous dimensions to transmit the power. Though not intended to be shifted into and out of mesh, the same materials and the same care have been employed in the making of the pinions of the gear-set, as if they were to be used for this strenuous service, so that the makers absolutely guarantee the life of the pinions for a year and will replace them should they break under any conditions of driving, short of a wreck. The clutch is also a special design consisting of a single aluminum friction disc, which when fully engaged is designed to be locked positively at four points to the flywheel itself.

The foundation of the chassis consists of the usual pressed steel frame, carried, in this instance, on Timken roller-bearing front and rear axles, drive being by propeller shaft. Thirty-six-inch wheels are fitted and are equipped with four-inch tires on the front and four and a half on the rear, Continentals forming the regular equipment of the car. Two sets of brakes are fitted, centered in special drums on the rear wheels, in accordance with the highest standard practise where this essential is concerned, but a departure has been made by constituting the external contracting set as the running brake and also by interconnecting it with the clutch. The internal expanding set forms the emergency brake and is operated by the usual hand lever at the side. The bodies fitted are of an attractive straight-line type and are built under the supervision of a bodymaker formerly connected with one of the large Continental works.



HAYNES GLIDDEN CAR AND APPERSON "JACKRABBIT" ENJOYING A FRIENDLY BRUSH ON THE ROAD.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

- Oct. 31-Nov. 7.—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
 Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
 Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon, C. R. Mabley, secretary and manager.

Races, Hill-Climbs, etc.

- July 13—Rochester, N. Y., Gymkhana Sports, Genesee Valley Park, Rochester Automobile Club.
 July 13—Chicago, Race Meet for the Entertainment of the Glidden Tourists, Chicago Automobile Club.
 July 25-28—Providence, R. I., Annual Meet of the Federation of American Motorcyclists.
 July 27—Schooley Mountain Hill Climb, near German Valley, N. J. W. J. Morgan, manager, Bretton Hall, New York City.
 Aug. 1—Algonquin, Ill., Hill Climb, Chicago Motor Club and Chicago Automobile Trade Association.
 Aug. 5-10—Atlantic City, N. J., Automobile Carnival, Atlantic City Automobile Club.
 Aug. 9-10—New York City, Brighton Beach Track, 24-hour Automobile Race, United States Motor Racing Association.
 Sept. 2—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
 Sept. 5—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
 Sept. 14—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
 Oct. 19—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

- July 20—New York to Marblehead, Mass., 270-mile Motor Boat Race, New Rochelle Yacht Club.
 Aug. 13-15—Chippewa Bay, St. Lawrence River, Gold Challenge Cup Race, American Power Boat Ass'n.
 Aug. 22—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
 Sept. 2-6—Jamestown (Va.) Exposition Motor Boat Races.

FOREIGN.

Shows.

- Sept. 28-Oct. 7—Denmark, Copenhagen International Automobile Show.
 Nov. 11-23—London, Olympia Motor Show.
 Nov. 12-Dec. 1—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.

Races, Hill-Climbs, etc.

- July 15-18—Ostend Week, Record Trials, Automobile Club of Belgium.
 July 25—Ardennes Circuit, Belgium (German rules).
 July 26—Ardennes Circuit, Belgium (Tourists).
 July 27—Ardennes Circuit, Belgium (Grand Prix rules).
 July 31-Aug. 8—Belgium Regularity Contest for Touring Cars, A. C. of Belgium.
 Aug. 1-7—Criterium of France, 1,750 Miles Touring Competition and 250-mile Race for the Press Cup, A. C. of France.
 Aug. 3—Isle of Wight, British International Cup, Motor Boat Race.
 Aug. 11-29—France, Coupe de Auvergne.
 Sept. 1-2—Italy, Brescia Circuit, Florio Cup, A. C. of Italy.
 Sept. 15—Austria, Semmering Hill Climb, Austrian Automobile Club.
 Oct. 1-15—Paris, Electric Vehicle Competition, Automobile Club of France.
 Oct. 13—France, near Paris, Dourdan Kilometer Speed Tests.
 Oct. 20—France, Gaillon Hill Climb.
 Nov. 1-15—France, Volturette Contest near Paris.
 July 14, 1908—Paris to London, Aerial Race.

CALIFORNIA'S WIDESPREAD INTEREST IN THE AUTO

By FREDERICK PABST.

LOS ANGELES, CAL., July 6.—Eleven thousand automobiles are now whirling over the roads of California, and each day the Secretary of State at Sacramento receives a bunch of new applications for numbers. Before the summer is over there will be over 15,000 machines in this State. Several months ago San Francisco and Los Angeles had about 3,000 cars each, but during the last couple of months the "City of the Angels" has fallen behind to a slight extent and now has about 4,000 cars to 4,500 in the northern city. This is due to the terrific condition of the streets in the earthquake town, which has caused the cars to be hammered to pieces. These conditions are such that a person must see and experience to fully realize them. But as the situation there makes it almost a necessity for a business man to have an automobile the business should continue good.

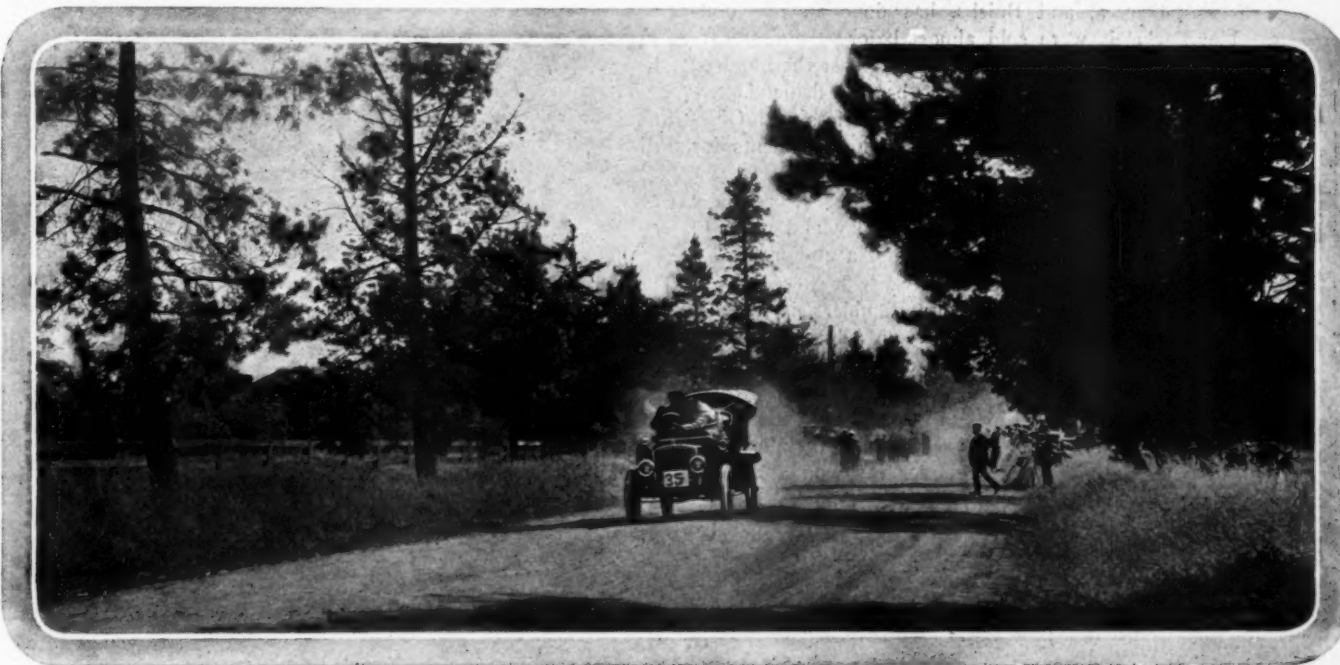
Business has been unusually healthy in Los Angeles, and, despite the fact that already seventy-six different makes are repre-

autos will be found to greatly outnumber any other transportation vehicle. Not only are there more machines owned here than in any other city in proportion to its population, but there are more cars in rental and all are making good money.

Los Angeles Has a Strong Trade Organization.

The dealers of Los Angeles have one of the best organized and most successful dealers' associations in the country. It is in its third year and has accomplished many things of benefit to the autoists of the entire State. Nothing but the efforts of this organization prevented the passage of two very foolish bills by the State Legislature. One was to force the owners to equip machines with straps in the tonneau. Another closed certain mountain roads to autos. A red-hot protest from the local dealers was followed by the killing of both of these bills.

The organization has also pulled off many successful hill



MRS. J. C. BROADIE, OF OAKLAND, COMPETING IN THE MITCHELL MOTOR CAR COMPANY'S CONTEST AT SAN JOSE, JUNE 7

sented in this city, others are entering the field constantly, and this season should see practically every car of any standing in the Southern California field.

Importance of California Field Now Recognized.

It has not been until lately that the manufacturers have come to recognize the importance of the California field. Anything seemed to have first call over California in the matter of deliveries, and as a result the companies which saw the opening and shot cars into this field disposed of many times as many as those on which shipments were slow. The automobile business in every branch is not only in a healthy condition now, but it should continue so. The city is growing to a remarkable extent, and a majority of the people who come to Los Angeles to live come with some money. And once here the spirit is in the air and the person who never dreamed of owning an automobile will soon be reading the automobile papers and haunting auto row.

California is blessed with autoing the year round, and when one person in about every sixty owns an automobile unpopular indeed is the man or woman who doesn't number an owner among his or her friends. Los Angeles can truly be said to be automobile mad. At any hour of the day or night on the streets

climbs, race meets and endurance runs. Its first was a couple of years ago to Santa Barbara. Over fifty cars competed, and, considering the hardships of the road and the fact that this was the first event of the kind, the run was highly successful. Two years ago the Pasadena-Altadena hill climb was inaugurated for February 22 and was one of the best events of the kind held in the country.

One year ago the endurance run "Round the Kite" was held and took rank at that time as the largest event in this country. One hundred and six cars entered and 101 started. The first day's trip was through the beautiful valley east of Los Angeles, passing through the towns of Pasadena, Monrovia, Pomona, Claremont, Ontario, San Bernardino and Redlands to Riverside, where the night was spent. The next day's run was through the Santa Ana canyon to Los Angeles. This was followed by a second Altadena hill climb, and a few weeks ago a successful race meet was pulled off at Agricultural Park. Last January this Association gave an automobile show which was voted one of the most artistic in the country.

W. K. Cowan was the first president. He is the local Rambler agent. A. J. Smith, representing the Elmore, was the next president, and at a recent meeting J. W. Willcox, of the Maxwell-

Briscoe-Willcox Company, was elected. Leon T. Shettler, the Reo representative, has been secretary for two terms. He is a hustler and has been a leader in all the Association's successful undertakings.

An Air of Prosperity Exists on the Row.

There is an air of prosperity through automobile row. The old dealers are doing well and the new firms are selling an unusually large number of machines. Among the tire and supply men business is phenomenal.

The electricians have had a boom here during the last year. The Electrical Construction Company is doing most of this business, having the agency for the Waverly, Baker and Columbus. B. L. Brown, formerly of Pittsburg and St. Louis, is responsible for the big electric business. He took hold when this branch of the business was not being pushed and has done wonders.

L. T. Shettler has had a big year with the Reo. He has the best organized selling force in the State, having made the boast that practically every live sub-agent in the State was selling Reos as fast as he could get them.

The Western Motor Car Company, with a big line, Packard, Thomas, Stevens-Duryea, and Buicks, has done an enormous business. The Packards were sold almost before the first cars reached here, and the number of Buicks sold is past the hundred mark. The two Thomas models have also been in demand.

The H. O. Harrison Company, with the Peerless and Oldsmobile, has placed fifty cars on the market. The allotments for both makes are almost exhausted.

The Auto Vehicle Company, makers of the Tourist, are many orders behind now, with the factory working day and night to catch up. This company is building a 22 and a 40-horsepower touring car of modern construction.

W. K. Cowan, who handles nothing but Ramblers, is the veteran of all dealers. He has been building up a business which sticks to the Rambler and can see nothing else.

D. M. Lee, with the Cadillac, has been handicapped by late arrival of cars, but he has placed many of the sturdy little single cylinder machines and has orders booked three months ahead for the G and H models. The single cylinder car won a host of friends by making a non-stop run from Los Angeles to San Francisco and return. The 30-horsepower car also won a fifty-mile race in good time recently.

A. J. Smith has sold his entire allotment of four-cylinder Elmore's and has but few of the three-cylinder variety remaining. His car recently won a fifty-mile track race here.

The Greer-Robbins Company, agents for the Mitchell, has recently moved into a large new garage and salesroom. The company has twenty-one orders unfilled.

Captain H. D. Ryus had orders taken for fifteen White steamers before a single car reached Los Angeles. The week of the arrival of the first steamer of the new type six additional cars were sold. The White Garage Company has also done well with the Pope-Hartford and Pope-Toledo.

The Success Automobile Company has the Locomobile and Winton, and has suffered by late shipments. This company is now offering the Panhard, Simplex, Mercedes, Renault and the Italian Isotta Fraschini car.

E. J. Bennett has made the Wayne popular in Southern California.

The Maxwell Company has been unable to keep up with the demand, and all other makes report flourishing business.

Supply Business Has Been Phenomenal.

With all these automobiles being sold, the supply business has naturally been phenomenal. W. D. Newerf, who has the Good-year tire for the Coast, has just placed an order for \$60,000 worth of tires and will establish agencies in Portland, Seattle, Fresno, San Diego, San Francisco, Honolulu and other towns large enough to support the business.

The Western Rubber Company, with Guy West at the head of the management, is doing more with the popular G and J tire than any Western company has ever done before.

The Chanslor-Lyon Company is probably doing the largest accessory business in the city. This firm has the sole agency for a large line and also handles the Diamond tires.

The E. A. Featherstone Company has the largest supply house in the city and has a large following. E. A. Featherstone is the head of a company which recently purchased the interests of Heineman and Pearson.

John T. Bill has the motorcycle business all but cornered. He has sold over 100 machines during the last three months and to care for his retail and wholesale business it has been necessary to double the store room.

Eddie Helm, the manager for the Gorham Rubber Company, has had the best year the company has known. Mr. Helm has placed the Goodrich tires in an enviable position in Southern California.

The general opinion among the local dealers is that business will continue to improve from month to month. The summer may be a bit quiet, but by September things will be humming.

WITHOUT FOOD AND GASOLINE ON GOBI DESERT

PARIS, July 2.—Adventures are coming thick and fast to contestants in the Pekin-Paris automobile race—which is no race at all, but a go-as-you-please help-one-another tour. Cormier, who cables when he can find a telegraph station, states that they are on the Gobi Desert, with Prince Borghese, on an Itala, ahead and the remainder, consisting of two De Dion Boutons, a Spyker and a Contal tricar, following on as best they can. The Tartans are the finest fellows in the world. They supply all kinds of food and furnish camels' milk—the most detestable stuff imaginable—with the agility of a bartender. When the Spyker was stranded with an empty gasoline tank they came to the rescue. Twice on the Gobi Desert the Itala sank in the morasses, and was only rescued after terrible exertions by wild Mongolians, with oxen.

On another occasion, when the Spyker had taken over a large portion of the baggage of the Contal tricar, the gasoline supply became exhausted. Cormier lent four liters, all he could spare, and when this was exhausted the party pitched their tent with one chicken, an army biscuit and a quart of water as total rations.

After twenty-four hours a Mongolian woman appeared on a camel and supplied a few drops of muddy water. By signs and by showing a rope she was made to understand that a tow was needed. Her camel, however, was insufficient to the task, dragging the car forty yards, then leaving it still deeper in the sand. The second night the party had not courage to erect the tent, and were further disheartened by a party of Mongols refusing to give help. Godard, the Spyker driver, went out alone to search for help, and after an absence of two hours came back with a troop of horsemen, who, after being paid in advance, carried a message to the nearest telegraph station and caused help to be brought. The record travel for one day across the Gobi Desert was 160 miles.

Later despatches from Cormier announce that they have crossed the Gobi and are now waiting at Ourga for the Spyker and the Contal tricar, left behind on the desert, to join them, when the complete party will commence the passage across Siberia. The last day on the desert they were able to travel 150 miles, which, over rough country without a semblance of a road, is excellent.



MACHINE USED BY THE EMULSIFIX TAR SPREADING SYSTEM.

TAR-SPREADING EXPERIMENTS IN ENGLAND.

LONDON, July 1.—Some experiments of great interest and importance have been carried out by the Roads Improvement Association in conjunction with the Motor Union and the R. A. C. After investigation with various deliquescent chemicals, the general opinion of road surveyors and other responsible judges inclines towards tar coating as the most satisfactory and economical preventative of dust raising. Resulting from this feeling the present competition was set on foot to test the respective merits of various machines designed to supersede the old method of tar painting the road surface by manual labor.

Seven machines were assembled on the Howslow-Staines road near London, and before an interested crowd of officials and spectators each apparatus was set to work on separate quarter-mile sections; half the road being covered in the morning and the other portion later in the day, so as to cause no interference with the road traffic. Crude coal tar was supplied by the association to the competitors at cost price, and the general use of this material rendered subsequent observation of the results far more easy and facilitated comparison.

The first machine, Aitken's pneumatic tar sprayer, consisted of an attachment capable of being fitted to any steam wagon. The tar is heated in its tank by steam pipes and an air pump compresses air into a receiver up to a pressure of 150 pounds per square inch. When normal pressure has been reached a separate tar pump forces the heated material into the receiver until the pressure reaches 250 lbs. per square inch; the machine is then ready for use. The distributing pipes are fitted with four discharge nozzles which spray the tar in a finely diffused condition into the top layers of the road surface.

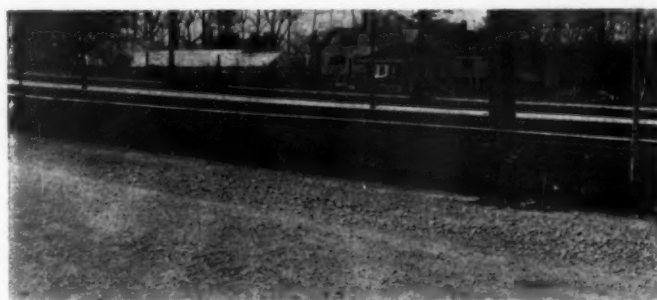
The Emulsifix machine consists mainly of a large mixing chamber into which water and tar are fed. Revolving paddles spray the mixture into an emulsified compound which is sprayed

by gravity on to the road surface. When the water has evaporated it is claimed that the finely divided tar oil will bind the surface materials together. The Laissaily system requires two separate machines, one to heat up the tar and a second or more machines to spread the heated compound. Steam generated on the heating machine warms the tar by coiled pipes to a temperature of about 212 degrees F. At this stage the delivery carts are supplied by steam pressure and the tar is afterwards sprayed by gravity onto the road in front of heavily weighted brushes which spread the tar in a thin and uniform coating. In similar manner the Tarmaciser machine brushes the heated tar into the road surface and with an additional set of brushes in front, the loose dust is removed from the track. Unfortunately this vehicle met with an accident on its way to the scene of the competition and so its performance could not be witnessed. Three Tarspra machines were tried, differing only in size. A mechanically driven pump forces the tar at 200 pounds pressure through spraying nozzles by two opposing jets which impinge to-



SECTION OF NEWTON BOULEVARD TREATED WITH TARVIA.

gether and spray the tar in finely divided state. Thwaite's machine, which completed the list, sprayed the tar in conjunction with superheated steam, the temperature of the issuing material being over 300 degrees F.



ANOTHER SECTION OF SAME ROAD NOT TREATED WITH TARVIA.

All these machines were tried later on a gravel-surfaced road and, as before, careful observation was made of the amount of tar consumed and the time taken. When a sufficient period has elapsed to indicate the relative wearing qualities of the various sections of the road, the awards of the judges will be made, first prize consisting of \$550 and a gold medal, with \$250 and silver medal for next place.

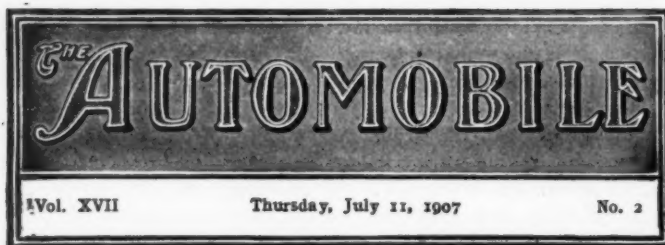
On two following days tests were made of some nine tar preparations which had been entered. The majority of these consisted of an emulsion of tar, oil and water, with the addition of caustic soda in some cases to retain moisture.

HOW TARVIATED ROADS ARE STANDING UP.

In the fall of 1906 numerous stretches of the famous Newton boulevard near Boston were covered with Tarvia to see the comparative effect of the winter and spring months on the surfaces treated and those not treated. The two illustrations above shown, from photographs made this spring, tell their own story of the advantages of tar treatment.



TARSpra MACHINE, WHICH SPREADS THE TAR UNDER PRESSURE.]



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Greatest Prosperity of the American Auto Industry. Scarcely a week passes without the recording of the fact that some builder, well known through his standing in the American industry, has found expansion imperative in order to keep pace with the demand made upon his manufacturing departments. Not that this condition is either temporary or unusual; last year saw the erection of a very large number of new buildings to already extensive plants, and the first half of the present year has been productive of a far greater number. But the most significant fact to be observed in this general process of expansion is that the firms that found it necessary to greatly increase their facilities but a twelvemonth ago are, in very many instances, the same builders who are again reporting the erection of new buildings that mean a tremendous increase in next year's total output of American cars.

It is, moreover, a matter for congratulation that this is the case rather than that new capital seeking wholly unwarranted and totally disproportionate returns for the outlay, should be attracted to this field, thus giving it an artificial as well as dangerous air of prosperity. In short, there is not the faintest suspicion of boom conditions in the American industry to-day despite the fact that it has more than doubled in the past two years. Practically 90 per cent. of this phenomenal growth does not represent an influx of small capitalists into a promised El Dorado such as that which threatened to retard the prospects of the industry in 1903, but consists of the addition of new facilities to plants already the largest of their kind, and the names of whose sponsors are associated with cars that form the backbone of American automobile production.

Considered statistically, the increase in the capital invested—that is, money actually spent for the erection of buildings and the purchase of machinery, will doubtless run up into many millions, while the greater facilities at hand mean an increase in the annual production—already the greatest of the world's automobile producing countries—of many thousands of cars.

Is there an outlet for such a huge number? And can they be produced and placed on the market without precipitating the very condition of affairs that every conservative maker is most anxious to avoid. Trade conditions in the past two seasons supply an answer that could hardly be more satisfactory to all concerned; though it is the lustiest infant that the world has ever seen, the automobile industry is yet in its infancy, and it would be idle to attempt to prophesy its future. Its growth has been characterized by legitimate expansion in accordance with the demand for its products in a manner that has seldom, if ever, been witnessed before, and a continuance of the same policy means long-continued prosperity.



Vogue of the Twenty-four Hour Automobile Race.

In the present great popularity of what has come to be familiarly known as "chasing round the clock" is to be seen but one manifestation of the demand for a more strenuous form of contest than has hitherto been commonly looked upon as sufficient to try the merits of the up-to-date automobile. Record after record has gone down—literally annihilated, so great has the margin been by which it has been beaten, finally culminating in the truly phenomenal performance of S. F. Edge on the new Brooklands autodrome in England, whose feat of having averaged considerably better than a mile a minute for twenty-four hours, including all stops for refreshment, tires, fuel, and the like, must go down into history as the first of a line of startling feats of the same character that will doubtless follow, now that their achievement has been made possible by the provision of a proper course upon which to attempt them.

Henceforward long distance races of this character cannot possibly be other than a question of human endurance. It has been amply demonstrated time and again that the limit of the machine is still far from being a known quantity, while that of the driver is well recognized and must always be taken into consideration. But to revert to that phase of the subject dwelt upon first, it is evident that the form of testing for endurance and other qualities, familiarly known to the vernacular as "joy riding," is no more the measure of a car's capacity in any particular than the same distance covered over well-paved streets would be. There is still a large part of the non-autoing public that is waiting to be shown, and the ease with which the up-to-date car can make clockwork records on most of the tests hitherto in vogue has been responsible for the general demand for something a bit more strenuous. At present the answer to the call appears to have taken the shape of the twenty-four hour race, and, judging from some of the performances, this must soon lose its keen edge of interest, and then there will be a demand for something harder. Following in the footsteps of the bicycle, this would doubtless be the six-day "go-as-you-please."



Fourth Annual A. A. A. Tour Promises Good Results.

Of undoubted good to the automobile industry will be the Fourth Annual Tour of the A. A. A., which started from Cleveland yesterday morning and will conclude in New York City on July 24. Nearly a hundred motor-driven vehicles, the greater part of them engaged in competing for the Glidden and Hower trophies, will travel some 1,500 miles, over all kinds of roads, and it is safe to prophesy that there will be few to fall by the wayside, and that the tour as a whole will reflect unmistakably the stanchness and reliability of the American automobile, which is now the equal of any built.

INDEPENDENTS TO SUPPORT CHICAGO SHOW.

After considerable deliberation on the part of the executive committee of the American Motor Car Manufacturers' Association, the conservative element dominated the situation and the Association as a whole has decided to bow to superior force and support the show of the National Association of Automobile Manufacturers at Chicago this fall. It was realized that the latter is so strongly intrenched where the Chicago show is concerned that it would be useless to attempt to make an independent effort this year. But it is said that there will be a different story to be told in 1908. The following announcement issued by the publicity bureau of the A. M. C. M. A. on Monday last explains the situation fully:

"Although the American Motor Car Manufacturers' Association did not receive the recognition which it considered fair to its members in exhibiting at the Chicago show, the committee having the matter in charge felt that rather than disturb the trade conditions at the present time by making a move which might not be beneficial to the industry the present conditions should be supported. Besides, there was a decided lack of interest on the part of manufacturers in connection with the Chicago show, only twenty-three out of forty-five members of the American Association taking space. Big manufacturers like Ford, Buick, Pennsylvania and American Mors did not apply.

"Moreover, the goddess of chance seemed to favor American Association members in the drawing, for, with few exceptions, they all secured excellent space. This, combined with the feeling that an independent show at Chicago this year might not be best for the automobile trade as a whole, has resulted in the announcement that the A. M. C. M. A. would work in harmony with the N. A. A. M. in the promotion of the affair in Chicago this December.

"Working with the Chicago Automobile Club, arrangements for an independent show in Chicago for 1908 are now under way."

N. A. A. M. TEST CASE GOES HIGHER UP.

As was anticipated would be the case, the New Jersey Court of Errors and Appeals, which is the court of last resort in that State, has decided adversely to the defendant in the case of the State of New Jersey vs. Harry Unwin, under which title the action brought by the National Association of Automobile Manufacturers to test the validity of State laws has been parading. The opinion is to come later. It will be recalled that the action was begun by the prearranged arrest of Harry Unwin, then of the Harrolds Motor Car Company and since with the White Company in New York, for driving a car in Jersey without a license issued by the authorities of that State. The defendant was taken before Justice Higgins in the First District Criminal Court in Jersey City and sentenced to pay a fine of \$10—all of which had been prearranged by counsel to the Association, Charles T. Terry. An appeal was taken and the action has since been slowly making its way up through the Court of Common Pleas and other steps intervening. This adverse decision means that it will be carried to the United States Supreme Court, in accordance with the intention of the sponsors of the action. The latter was originally brought before the obnoxious Freylinghuysen law, now in force, came into existence, but this does not alter matters, as the principle remains the same—that of a State compelling residents of another State to pay for the privilege of traveling within her borders, as well as test the constitutionality of State registration laws generally.

GERMANY REFUSES THE WRIGHTS' INVENTION.

BERLIN, July 1.—It is commonly reported in well-informed circles here that the German Government has refused to buy the Wright brothers' aeroplane, giving as a reason that the machine is not suited for military purposes. It can only carry one man, who would be too occupied with the control of the machine to be able to perform any other duties.

A. M. C. M. A. ADOPTS STANDARD WARRANTY.

While each member of the American Motor Car Manufacturers' Association, usually known as the independents, has made a practice of guaranteeing his cars, no official action has hitherto been taken on the subject by the Association as a whole. The matter came up for discussion before the committee of management at its last meeting on June 27 and a warranty, to be known as the A. M. C. M. A. guarantee, was formally adopted.

We warrant the motor vehicles manufactured by us for ninety days after the date of shipment, this warranty being limited to the furnishing by our factory of such parts of the motor vehicle as shall, under normal use and service, appear to us to have been defective in material or workmanship.

This warranty is limited to the shipment to the purchaser, without charge, except for transportation, of the part or parts intended to replace the part or parts claimed to have been defective, and which, upon their return to us at our factory for inspection, we shall have determined were defective, and provided the transportation charges for the parts so returned have been prepaid.

We make no warranty whatever in respect of tires, rims, and batteries.

The condition of this warranty is such that if the motor vehicle to which it applies is altered, or repaired, outside of our factory, our liability under this warranty shall cease.

The purchaser understands and agrees that no warranty of the motor vehicle is made, or authorized to be made, by this company, other than that hereinabove set forth.

Dated.....

W. F. FULLER HEADS CONNECTICUT ASSOCIATION.

HARTFORD, CONN., July 8.—President William F. Fuller, of the Hartford Automobile Club, was recently elected president of the Connecticut State Association of the American Automobile Association. Major George M. Landers, of New Britain, insisted upon the acceptance of his resignation as president of the State body, of which he will still remain a director, stating that his time was too much occupied at present to permit him to give proper attention to the office. Frank T. Staples, of the Automobile Club of Bridgeport, is vice-president of the Connecticut Association; Guy K. Dustin, of the Hartford Club, secretary, and B. R. Hertzberg, of the Stamford Club, treasurer. The State Association is now composed of clubs in Hartford, New Britain, Bridgeport, Stamford and Yale. The Automobile Club of Stamford and the Yale Automobile Club were admitted at the last meeting.

CHANGED DATE FOR ST. LOUIS BALLOON RACE.

A cable from Courtlandt Field Bishop, now in Paris, announces that the Gordon Bennett international balloon race will be held on Monday, October 21, and not on Saturday, October 19, as at first intended. To comply with the rules requiring competitors' names to be made known sixty days before the event, they should be sent in by August 21. As is well known, Italy will not be a contestant in the race, owing to entries not having been sent in at the proper time. The Spanish club having failed to forward its entrance fee for three balloons entered, negotiations will have to be begun in order to regularize their participation.

Secretary A. B. Lambert of the St. Louis Aero Club, who is visiting Paris for the second time this year, says that the citizens of St. Louis are subscribing money for prizes of \$5,000 and \$3,000 for an aeroplane and steerable balloon demonstration to take place after the Gordon Bennett contest.

DATES SET FOR A. C. A. PALACE SHOW.

Speculation as to the date of the combined eighth annual show of the Automobile Club of America and the American Motor Car Manufacturers' Association has been set at rest by the announcement that it will be held in the Grand Central Palace from October 24 to 31, ending just two days before the opening of the Garden show. Arrangements have been made for an increased amount of space and a new scheme of decoration is being prepared. The club will probably hold its annual banquet on the closing day of the show.

HEINZE FURNISHES LOWELL EXCITING SPORT.

LOWELL, MASS., July 8.—Exceedingly fast times and an accident that came near proving fatal to A. E. Morrison, of Boston, marked the race meet promoted by J. O. Heinze, of the Heinze Electric Company of this city, and held here on the Fourth before a crowd of more than 20,000 people. The races were held on the Boulevard and the course for miles was lined with people many deep. It was impossible to properly police the long stretch and the spectators interfered more or less with the competitors, otherwise faster times might have been made. In other respects the program furnished excellent sport and the arrangement was carried out without a hitch other than a slight delay due to the accident to Morrison, who lost control of his Stearns near the upper end of Tyng's Island. It is thought he attempted to turn at too high a speed and the car turned turtle, breaking his left leg. It was at first reported that Morrison had been killed and the races were ordered stopped. George M. Brown, who brought the injured man back to the line in his Apperson car soon proved the report to be false and the program was resumed.

In the races that followed some excellent times were made, particularly in the five-mile event for high-speed runabouts, which was won by the American, driven by W. A. Frederick, in 5:10. Other events that brought forth considerable applause were the exhibition spurts against time in which Robinson in a Stevens-Duryea covered the course in 46 1-2 seconds, this again being lowered by Fred Marriott in the Stanley steamer, who did the distance in :45 1-4. The final was a free-for-all and was won by the American, W. Frederick up, who did the mile in 45 seconds, making the best time of the day, the Corbin, driven by Wilson, being second in 1:03 1-2. J. O. Heinze had general charge of the arrangements, being assisted by Harry J. Noyes and J. Fred Walsh. The summaries of the event follow:

FIVE MILES, FOR GASOLINE TOURING CARS, 24-H.P. OR LESS.

1. Corbin, 24-horsepower; driver, Wilson..... 6:28

FIVE MILES, FOR GASOLINE TOURING CARS, 24-H.P. OR OVER.

1. Stevens-Duryea, 50-horsepower; driver, Hancock..... 5:00

FIVE MILES, FOR HIGH-POWERED GASOLINE RUNABOUTS.

1. American, 45-horsepower; driver, W. A. Fredericks..... 5:10

ONE-MILE STRAIGHTAWAY, FREE-FOR-ALL; FLYING START.

1. Stanley steamer; driver, Fred Marriott..... 0:45 1-4

ONE-MILE EXHIBITION RACE.

- Stevens-Duryea, 50-horsepower; driver, Hancock..... 0:46 1-2

READING MEET BRIMFUL OF EXCITEMENT.

READING, PA., July 8.—Events not on the program afforded considerable added interest to the meet of the Berkshire Association here last Thursday. To lead off with, Robert Morton, driving a 30-horsepower Pullman in the first automobile event on the program, left the track on a curve at full speed and crashed through the fence. Morton saw what was coming, however, and jumped in the nick of time, so that he drove in the following events. He could not explain the cause of the accident and it was thought to be due to an excess of patriotism on the part of a small boy in throwing firecrackers. The latter also contributed more excitement later in the day, when someone threw firecrackers under George McFarland's Stanley steamer, setting both the car and his clothing ablaze. He was painfully but not seriously hurt.

In the races the showing of the York Motor Car Company's Pullman cars and the Jackson from the garage of the Motor Vehicle Company was the feature of the day. The first event on the program was a motorcycle race, which was followed by a two-mile race for the Rambler Cup, open to stock gasoline runabouts costing \$3,000 and under. The first heat was between a 30-horsepower Oldsmobile and a 30-horsepower Pullman, the latter winning in 2:41 2-5, while the second heat was between a 30-horsepower Haynes and a 40-horsepower Pullman, the latter win-

ning in 3:09 and also taking the final. The winning car was protested by the Haynes as not being a stock car, but the protest was overruled. The star feature of the meet was the two-mile race from a flying start, open to stock cars costing \$1,200 to \$2,500 for the E. S. Youse Cup. It was competed for by the 30-horsepower Jackson and the 35-horsepower Rambler, driven by Zimmerman and Herbert Bitner respectively. The race was nip and tuck for every foot of the eight laps of the half-mile track, both drivers showing considerable skill in taking the pole away from one another at the turns, the Jackson winning by a final spurt in 3:05 1-5.

The success of the meet was largely contributed to by the attendance of the members of the Motor Club of Harrisburg, which held a run to this city for the occasion and were hospitably entertained by the Berkshire Association.

ST. LOUIS HAS A TWENTY-FOUR HOUR RACE.

ST. LOUIS, Mo., July 8.—Out of a field composed of a 50-horsepower Haynes driven by Wagner and Willard, a 60-horsepower Stearns driven by Alvin and Gorham, a 35-horsepower Matheson driven by Smith and Bane, a 35-horsepower Oldsmobile driven by Corkhill and Bagnell, a 30-horsepower Cadillac driven by Suttlers, and a 15-horsepower Elmore alternately piloted by Richter and O'Neill, a 35-horsepower Jackson with Burman at the wheel took the honors in the twenty-four-hour chase round the clock, which was started at the old Fair Ground race track here at 10 P.M. on July 3, by reeling off 833 miles, the Matheson finishing second with 752 miles to its credit. A Pope-Toledo, a Maxwell and a single-cylinder Cadillac were to have started, but were withdrawn. About 5,000 people were in the grand stand at the start and when the flag dropped the Haynes and Cadillac jumped into the lead and stayed neck and neck for the first thirty miles. At the end of the first hour the Cadillac was four miles ahead, the score standing: Cadillac, 43 miles; Haynes, 39 1-2 miles; Jackson, 39 1-4 miles; Stearns, 37 1-2 miles; Elmore, 36 miles; Matheson, 35 miles, and Oldsmobile 32 1-2 miles. The Haynes had trouble during the early morning and finally dropped out at the twenty-second hour, with 642 miles to its credit; the Elmore quit four hours earlier, or at the eighteenth hour, after having covered 502 miles. The Matheson maintained a comparatively slow but consistent pace and lost little time in adjustments. The summaries of the races which preceded the twenty-four-hour event, on the first day, are as follows:

FIVE MILES, STOCK TOURING CARS, \$2,000 OR UNDER.

1. Cadillac, 20-horsepower; driver, W. Bagnall..... 7:34 1-5

FIVE MILES, STOCK TOURING CARS, \$3,000 AND UNDER.

1. Jackson, 40-horsepower; driver, R. Burman..... 7:01
2. Corbin, 24-horsepower; driver, A. B. Cull.
3. Wayne, 35-horsepower; driver, Will Smythe.

TEN MILES FOR RUNABOUTS, \$3,000 OR UNDER.

1. Thomas, 40-horsepower; driver, Robbins..... 13:28
2. Wayne, 30-horsepower; driver, Will Smythe.

TWENTY MILES FOR HIGH-POWERED RUNABOUTS.

1. Packard, 30-horsepower; driver, Fred Grinham..... 23:32 1-2
2. American, 45-horsepower; driver, Tone.

TEN MILES FOR MOTORCYCLES.

1. Thoroughbred; rider, F. N. Maynard..... 7:25
2. Indian.

SPECIAL TEN-MILE EVENT.

1. Packard, 30-horsepower; driver, Fred Grinham.

BARNEY OLDFIELD ATTEMPTS SUICIDE.

PORTLAND, ORE., July 6.—As the result of his arrest on the technical charge of having obtained money under false pretenses, by using the name of the local automobile club in order to obtain prestige for the race meet held here a few days ago, without the sanction of the club, Barney Oldfield to-day attempted to jump from the window of his room in the hotel. He smashed the glass with his bare hands, which were badly cut, but he was restrained from jumping by his wife and a hotel detective, who responded to her calls for help.

21 CLEAN SCORES IN BAY STATE RUN.

Boston, July 8.—The touring committee of the Bay State Automobile Association, under whose auspices the endurance run from this city to Keene, N. H., and return, a distance of 207 miles, was held on Saturday, held a meeting to-day and announced that twenty-one cars had made perfect scores, while twelve were penalized. Of the cars with perfect scores, four are runabouts and the remainder touring cars. The perfect-score cars will be given handsomely engraved certificates. The results are as follows:

Car	Driver	Penalties
*Oldsmobile	A. A. Knights	0
*Peerless	H. H. Brown	0
Pope-Hartford	E. E. Dodge	0
Columbia	H. Woodaver	0
Rambler	V. A. Charles	0
*Peerless	R. R. Ross	0
Marmion	F. F. Wing	0
Berliet	H. Grant	0
*Shawmut	H. Church	0
Cadillac	H. Kroh	0
Grout	L. W. Grout	0
Winton	L. B. Harris	0
Stoddard-Dayton	G. Todd	0
*Craig-Toledo	W. H. Latham	0
Studebaker	W. G. Jones	0
Corbin	J. Corbett	0
Knox	F. S. Crockett	0
Knox	W. E. Wright	0
Lozier	R. Mulford	0
Elmore	G. W. Turner	0
American Mors	F. L. Townsend	0
Dragon	C. J. Lewis	1
Aerocar	E. Page	2
*Jackson	E. P. Blake	3
Maxwell	R. Coburn	3
Rambler	J. E. Brennan	4
*Corbin	J. Matson	6
American	W. R. Kelley	32
*Cadillac	H. Murch	33
*Ford	Partridge	43
Grout	H. H. Hawkins	50
Rainier	C. D. Price	174
Bay State Forty	R. Drisko	Dropped out
Ross	A. H. Waitt	Did not start

*Runabouts.

GROWTH OF AUTO ROUTE INFORMATION.

Probably there are a few copies yet in existence of the Official Automobile Blue Books for 1901 and 1903, the result of the first attempts to map out routes especially for automobile touring in this country. If those who still have the 1901 edition will place it alongside the set of three volumes comprising "The Automobile Official A. A. Blue Book," No. 3 of which has recently been issued, the growth of six years will be shown in a very striking manner.

The outside cover of the original volume reached exactly to the top of the gold-leaf imprint on the latest volume. A still greater contrast is shown by the inside pages on which the routes are listed, the dimensions being $5\frac{3}{4}$ inches by $3\frac{3}{4}$ inches in the 1901 edition, as against $8\frac{1}{2}$ by $4\frac{1}{2}$ inches in the 1907 edition. Expressed in type area, there are only 21.56 square inches on the smaller page to 38.25 square inches on the larger page.

There are exactly 68 net pages of route matter in the original Blue Book, with more than half of these pages partly blank. Nearly twice as much type is used for the New York City section alone of the New York State volume as the aggregate of route matter in the initial volume. In 1901 there were no maps; in the present editions there are about 700 route maps and city and town diagrams. As a piece of publishing the 1907 Blue Books are equal to about 40 of the first edition bulked together.

VERMONT ADOPTS RECIPROCAL POLICY.

In perusing the "Official Automobile Blue Book" many autoists have been struck by the fact that in the chart of automobile laws printed therein no reference was made to the Vermont law. Good and sufficient reason is to be found for this apparent omission in the fact that there is no Vermont law, for up to the present the legislature of that State has not seen fit to pass any specific legislation on this subject. The Vermont Secretary of State has, however, informed the editor of the Blue Book that "non-residents who are duly licensed in the State of their residence and whose cars are registered therein need not take out another license.

A. C. OF ST. PAUL MAKES A STATEMENT.

Editor THE AUTOMOBILE:

Inasmuch as mention has been made in your paper of the race meet scheduled for June 28 and 29 at our State Fair Grounds, by the United States Racing Association, under the auspices of the St. Paul Automobile Club, I desire to inform you of some of the facts in respect to said meet, in order that the same may be properly written up in your magazine. The United States Racing Association, under the management of H. W. Pickens, agreed to run the meet, furnish its cars and drivers, and advertise the same. Among the drivers it agreed to furnish and which through its advertisements it promised the public would take part in the meet, were Eddie Bald, with his American car; Mongini, with his Matheson; Coey, with his Thomas; Herbert Lytle, Kulick, and Kild McCoy. The meet was to consist of a \$3,000 sweepstakes race in which the professional drivers were to take part Friday afternoon, a 24-hour endurance race in which they were to take part, and a preliminary program of local events.

Upon arriving in St. Paul a few days before the meet Mr. Pickens informed us that the racing cars had been shipped and the drivers would be here. When they actually pulled off the meet it developed that the only drivers brought were Bald and Mongini; that they had not brought a single car, and we had to secure from our club members the loan of cars for Bald and Mongini to drive. The \$3,000 sweepstakes race scheduled to be the event for Friday afternoon and to be participated in by the professional drivers with their own cars was not run, but was postponed until Saturday, at the end of the meet, and then run by Bald and Mongini with two local cars. The result was that the public on Friday afternoon considered itself the victims of a bunco game on the part of the United States Racing Association, and the attendance on Saturday afternoon was naturally extremely small.

As secretary of the Automobile Club I have been deluged since the meet with complaints on the part of the spectators on account of the misrepresentation made by the United States Racing Association. Mr. Pickens has presented to us no reasonable excuse for not having furnished drivers and their cars outside of Coey, and the matter would seem to be clearly one for a protest to the A. A. A. Racing Board. What action the club will take I cannot say, as the matter has not been formally acted upon, but I write this information to you in order that the meet may be written up as it should be in your magazine.

St. Paul, Minn.

H. S. JOHNSON,
Secretary, Automobile Club of St. Paul.

CHICAGO DRIVERS TAKE HONORS AT PEORIA.

PEORIA, ILL., July 6.—There was a race meet held here on the fourth, but one might have thought himself in Chicago, for drivers from the latter city took firsts in all the events except the initial one on the program in which Price, driving a 16-horsepower Maxwell, was pitted against Bald in a 40-horsepower Glide, who naturally had an easy time of it, making the ten miles in 14:56. The event of the day was termed a six-hour Endurance Derby, in which C. A. Coey, in a 60-horsepower Thomas, carried everything before him, making 269 miles, thus beating the former record of 238 miles made by Charles Soules in a Pope-Toledo at Columbus in 1905 by a comfortable margin. Following is the summary of events:

TEN MILES FOR TOURING CARS UNDER \$2,500.

1. Glide, 40 horsepower; driver, Eddie Bald.....14:56
2. Maxwell, 16 horsepower; driver, C. W. Price.

FIVE-MILE MATCH RACE, STANDING START.

1. Thomas, 60 horsepower (four cylinder); driver, C. A. Coey..7:38
2. Glide, 60 horsepower (six cylinder); driver, R. Mongini.

SIX-HOUR ENDURANCE RACE.

1. Thomas, 60 horsepower; driver, C. A. Coey.....269 miles.
2. Glide, 60 horsepower; driver, A. Mongini.....231 miles.
3. Glide, 40 horsepower; driver, Eddie Bald.....216 miles.
4. Maxwell, 16 horsepower; driver, C. W. Price.....186 miles.

INCREASED TAXATION FOR NEW JERSEYITES.

TRENTON, N. J., July 9.—Additional taxation for New Jersey automobilists is proposed in a bill to be presented at the present session of the State Legislature by Assemblyman Simon Hahn, of Essex County. The measure, which is in the nature of an amendment to the Frelinghuysen automobile law, proposes that the fee of \$3 for vehicles under 30-horsepower should be increased to \$10, and that cars over 30 horsepower should pay \$15. The proceeds of this increased taxation are to go toward the abolition of the dust nuisance.



ENGLAND'S SEA-WASHED COAST AT SALTSBURN, WHERE THE YORKSHIRE AUTOMOBILE CLUB HOLDS ITS ANNUAL MEET.

RACING ON SALTSBURN SANDS IN YORKSHIRE.

SALTSBURN-BY-THE-SEA, ENGLAND, June 30.—A. Lee Guinness' flight of 1,100 yards across Yorkshire's rain and sea-sodden sands at the terrific rate of 111.84 miles an hour was the outstanding feature of the third annual Yorkshire Automobile Club meet in this usually quiet Northern seaside resort. Guinness drove the eight-cylinder 200-horsepower Darracq with which Hemery first broke records in the south of France and on Florida beach and had the glory of beating hollow last year's figures of 96.5 miles an hour established by Warwick Wright, also on a Darracq. The performance is not a world's record, for last July at Ostend, with the same machine, the young Englishman covered the kilometer in 19 seconds, equal to 117.5 miles an hour. Very heavy showers fell throughout the day and the sea invaded the track, making what would have been an excellent course into a moderate one. The Darracq's only competitor was a Dietrich driven by Suison, who failed to make a good showing.

Owing to the wet condition of the starting boards considerable difficulty was experienced by many competitors in making a start. When dry sand had not been put under the wheels they frequently revolved two or three seconds without the machine advancing an inch. In Event G, for touring cars costing not more than \$2,000 and carrying the full load of four passengers, two 15-horsepower Fords competed together, the victor covering the course at the rate of 30.98 miles an hour. Another good race was witnessed between J. E. Hutton's Berliet and F. A. Bolton's Daimler, won by the French machine at the rate of 48.63 miles an hour. A strong force of police kept the crowd of spectators on the grassy cliffs, which formed a natural grand stand, and signalers from the royal navy rendered valuable service in transmitting messages from one end of the course to the other. As an indication of the thoroughness of the organization, it is interesting to note that the managing committee insured the whole of the crowd of spectators with Lloyd's against all risks.

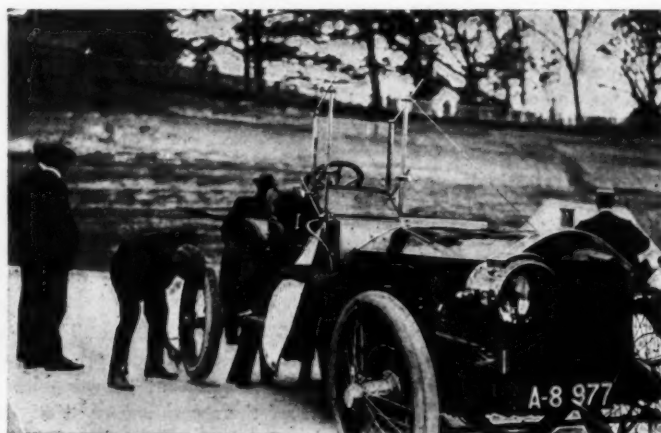
50-MILE AUTO RACE TRACK FOR GERMANY.

BERLIN, July 6.—After England and America, Germany is to have a special race track for automobiles, provisional approval for which has just been granted by Emperor William. The course proposed by the Imperial Automobile Club will be fifty miles long and thirty feet in width, laid out through valleys, over hills and bridges and around sharp curves. Its location is near Eilfel, in Rhenish Prussia. The capital required for the construction of the track is estimated at several million of dollars, which will be sought from leading automobilists and automobile manufacturers. As the matter has the royal approval, it is thought that the plans for its completion will be rushed through without any delay.

LONDONERS SEE FAST RACING AT BROOKLANDS

LONDON, July 6.—Huge crowds gathered at the Brooklands track to-day on the occasion of the first public races and waxed enthusiastic over a mediocre performance. The meeting, however, had the advantage of novelty and gave Londoners an exhibition of automobile speed to which they have previously been entire strangers. A number of Continental drivers came over to compete in the races, which were planned on the same lines as horse races, the vehicles starting simultaneously and the only criterion of success being priority in passing the winning post. Each driver wore a colored jacket, as is done by jockeys in horse races. J. E. Hutton, driving a French Berliet, won the Montagu cup, valued at \$9,500, besides a trophy worth \$1,000, in a keen competition uniting eleven starters. The stakes in the half dozen races aggregated \$22,500. No official times were taken, but in several cases a speed of ninety miles an hour was attained and the excitement ran high.

In his recent twenty-four-hour track performance, when, on a six-cylinder Napier he covered 1,581 3-4 miles, S. F. Edge had his machine fitted with a special seat and was protected by a glass wind shield of the smallest possible dimensions to reduce resistance. The machine was a standard model stripped for the occasion and fitted with wire wheels. Instead of changing tires, the wheels were taken off and replaced by others with the inflated tires in position. For several weeks before the event Edge had undergone a rigorous training in swimming, cycling, walking, Sandow exercises, and long rides on the car he was to drive in the race. He declares that the physical feature of the race was more important than the mechanical one, as the question was entirely one of human endurance in which the machine played no part.



EDGE'S RECORD BREAKING NAPIER ON BROOKLANDS TRACK.

CLUB DOINGS IN THE MIDSUMMER SEASON

Grand Rapids Club Agrees with Park Commissioners.

GRAND RAPIDS, MICH., July 8.—The question of excluding automobiles from the parks has been settled by a compromise, to which the Automobile Club of Grand Rapids agreed. At the last meeting of the Park Commissioners it was decided that it would be unnecessary to exclude automobiles from all parks, but owing to the danger on the principal street in John Ball Park, called Glenwood road, which is very narrow and crowded in the afternoons, automobiles will not be allowed the use of this road after 2 P.M. each day. With this exception automobiles will be allowed anywhere in the parks.

The automobile club has called the attention of one of the aldermen to the State law requiring drivers to keep to the right in passing another rig, with the result that the aldermen will introduce a resolution into the council the purpose of which will be the enforcement of the State law in this regard. It is the desire that vehicles shall not only keep to the right, but if they desire to stop on the opposite side of the street that they shall turn completely around before stopping to avoid the confusion that would otherwise result.

Many complaints have come to the Sheriff's office lately from farmers whose rigs have been capsized or other damage done by their horses being frightened at speeding autos. The complaints were so frequent that he caused an investigation to be made. The limit of twenty-five miles is set by the State law, which also requires that drivers of autos shall not go faster than ten miles an hour when passing other conveyances.

The club at its last meeting resolved to support the sheriff in this action, the same as it has always done in cases of a similar nature. The club has taken a stand especially against the driving of autos by irresponsible youngsters, as it has been found that practically all of the accidents that have occurred have been due to the fact that young people were running the machines.

Members of the club are taking full advantage of their new country clubhouse. Every afternoon the Cascade Springs road is alive with autoists, who are going and coming from dinner parties held at the clubhouse. The city is full of visitors at the furniture exposition, and parties of these are being entertained every evening at the clubhouse.

Seattle's New Club Purchases a Country House.

SEATTLE, WASH., July 3.—Appropriate quarters for the recently organized Auto and Driving Club of this city have been secured by the purchase of the W. J. Bernard residence at Alki Point. The latter is a typical log house on the exterior and has long been a point of interest for visitors; its interior is finished in modern fashion, however, and it is, moreover, elaborately furnished. The house is being remodeled inside for club purposes, while the club stables are also being done over to accommodate a number of automobiles, and the whole has been placed in charge of Charles Borngesser as manager, who has been long and favorably known here for his ability in this line. The acquisition of such attractive quarters and all the advantages they afford will doubtless do a great deal to rapidly swell the club's membership.

Philadelphia Club Nearing the 500 Membership Mark.

PHILADELPHIA, July 8.—Judging from the present rate at which its membership list is growing, the Automobile Club of Philadelphia is in a fair way to accomplish the object outlined at its last annual meeting, the increase of its roster to the half-thousand mark. At the last monthly meeting held a few days ago, 31 new names were added, bringing the total to 436, prominent among the additions being President McCrea, of the Pennsylvania Railroad; James Elverson, owner of the Philadelphia *Inquirer*; Bert Lippincott, William H. Wanamaker, Jr., Dr. John Denver and others. Chairman Powell Evans, of the routes and signpost committee, announces that the work of posting the Trenton and Harrisburg routes will be immediately undertaken, and the board of directors in recognition of the good work being done by this committee has agreed to double its appropriation, so that all roads leading into the city may eventually be marked for the benefit of tourists.

S. Boyer Davis, secretary and counsel for the club, reports that the State ruling in reference to "tooting" the horn at all cross-roads is again being very strictly enforced, and, in order to avoid arrest and the subsequent fine, it is suggested that every automobilist blow his horn at every cross-road throughout the eastern section of the State.



NEW CLUB HOUSE OF "LA MOVEGANZA KLUBO."

The home of the society women's new automobile club of Philadelphia. The mansion antedates the Revolution, and was at one time the residence of Benedict Arnold. It is located in Fairmount Park, one of the Quaker City's beauty spots.

Minnesota Club to Work for Improved Roads.

WADENA, MINN., July 6.—There are twelve autoists in this town, and they have decided to get together to form an automobile club. While the principal objects of the organi-

zation will not differ from those of other clubs, the chief motive of automobilists in this part of the country in getting together is to see what can be done by concerted effort to improve the local highways. It is thought that autoists from the surrounding territory will be induced to join in the movement, so that the club will be able to boast of a membership of at least fifty before long, when a fund for the improvement of the main highways will be raised.

Chicago Autoists' Race Meet for Glidden Tourists.

CHICAGO, ILL., July 8.—The Chicago Automobile Club has prepared most elaborate plans for the entertainment of the Gliddenites during their two-day stay here, probably the greatest feature of interest being the auto race meet to be held at the Harlem track on July 12 and 13. In the way of novelties the star performance in this will probably consist of what has been dubbed the Cupid race, three miles, open to stock touring cars carrying four women passengers, one of which is to be dropped at each quarter of the first mile, and who will again be picked up in the same order on the second mile, the finish being with all on board. No provision has been made for mistakes in picking up the passengers, and it is thought that the attempt of two or three cars to pick up its passengers at once will result in considerable amusement and excitement. A twenty-four hour chase round the clock, to be known as the International Endurance Derby, is also a feature of the program. The tourists are also to be entertained in other ways, special attention being paid to the fair members.



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CHINESE MINISTER'S CHILDREN IN A WINTON TYPE X-I-V.

The minister's daughter and little son are in the rear seat with the wife of the first secretary of the legation, Mr. Chow, who is at the wheel, and alongside is his baby, who was born in Washington, at the Chinese legation.

TO DRIVE POPE-TOLEDO IN ALASKA.

"Make-a-dam, but the roads in Norway are great," says Carl Lilliesterna, the Swedish auto globe trotter, who has just arrived on this side, making his fourth trip here in six years. In addition to being the only automobile hobo, Carl is an accomplished linguist, though his pronunciation is not always of the best, and it is never possible to guess what language he is thinking in at the moment. For instance, he did not intend to be profane regarding Norway's highways—it is only his way of saying macadam. Carl has driven an automobile all over the world, with the exception of Africa and Alaska, and it is the latter part of the terrestrial crust that he is now bound for, where he will take charge of the wheel of the Pope-Toledo which is to form the rolling stock of the most northerly stage line in the world.

Captain J. B. Hubrick, who made a reputation by successfully installing and operating a cable ferry across the Yukon at Dawson where so many others failed, is again going to attempt something that many others have been unable to accomplish—the running of a stage between Dawson and Granville. To do it with he has ordered a regular 40-horsepower Pope-Toledo touring car with accommodation for seven passengers and it is interesting to note the extended trip the car must take before it reaches



CARL LILLIESTERNA IN FAR NORTH POPE-TOLEDO.

the scene of its duties. From Toledo it will go to Seattle by fast freight to the coast, from there to Skagway by boat, then to the White Pass by rail, from which it will be carried on a flat-boat to Dawson. The car is painted a bright red in order to contrast with the snow, and its only special equipment consists of five-inch tires, extra tanks for gasoline, oil, water and anti-freezing liquids, as well as additional carrying cases for tires, batteries and spare coils, and it is equipped with enough accessories for a year's tour, though the route from Dawson to Granville can be covered in half a day. The success of the Pope-Toledo on the Tonopah, Goldfield and Death Valley stage lines suggested the idea and negotiations were immediately undertaken by wire. The fares have not been announced as yet, but there is not much chance of their being in accordance with the provisions of any two-cent-a-mile legislation.

GEORGIA LEGISLATOR LEARNS TO SELL AUTOS.

ATLANTA, GA., July 8.—After an absence of two years from the State, the Hon. John A. Sibley, a former member of the House of Representatives from Cobb county, has returned to Atlanta as representative of the Cadillac Motor Car Co. of Detroit. Mr. Sibley will have one of the largest territories in the United States, extending from the Potomac and Ohio rivers on the north to the Rio Grande on the southwest.

Mr. Sibley was only recently married to Miss Susie Cunningham, of Detroit, and he and his bride will be at the Majestic Hotel. In speaking of the future of automobiles and the agency at Atlanta, Mr. Sibley says: "The automobile has come to stay. I thought a business of that kind was the very thing for a hustler and I determined to learn it from the bottom. I went to Detroit, applied for a position and started as a machinist at 20 cents an hour. I worked in the Cadillac plant for nearly a year, engaging in every detail of construction. After some months of service I was transferred from construction work to the sales department of the Chicago dealers and the next step was my appointment as Southern representative."

ACME TO JOIN SIX-CYLINDER CONTINGENT.

While it will still continue to manufacture the four-cylinder cars that have long been known under this name, the Acme Motor Company, of Reading, Pa., announces that it will bring out a six-cylinder car for the season of 1908. The new car will be largely patterned along the same lines as its smaller predecessors, except that it will be equipped with drop axles and will have both the motor and transmission placed slightly lower. It will have a wheelbase of 122 inches and will embody numerous detailed refinements. The designer of the company, R. E. Graham, has made an exhaustive investigation into the matter of the popularity of the six-cylinder car with the result that he has come to the conclusion that it is here to stay and is not merely a fad. A six-cylinder high-powered runabout will also be placed on the market, using the same chassis as a foundation.

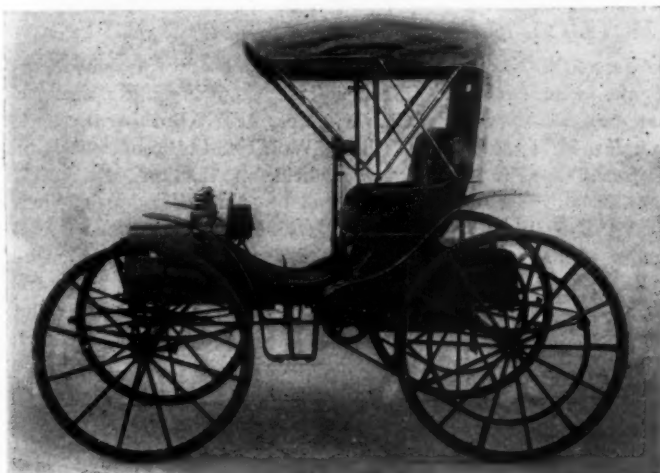
BARTHOLOMEW COMPANY PLANS ADDITION.

PEORIA, ILL., July 8.—Unless present plans miscarry, by the end of the year the Bartholomew Company of this city, builders of the Glide cars, will have one of the largest and most complete automobile factories in the country. Plans for an addition to cost \$150,000 have been completed and it is expected that construction will begin this fall, the new buildings to be erected on the company's property at West Bluff. Sometime ago plans were drawn for a large addition to the company's facilities, but before carrying them out it was decided to expand on a much more comprehensive scale. The new building will be about the same size as the present erecting shop on Fredonia avenue and will greatly increase the plant's capacity for turning out both four and six-cylinder cars during the season of 1906.

A SUCCESSFUL POPULAR-PRICED CAR.

"Power carriage" is the latest title for the variously styled "buggyabout," "buggymobile" and other similar designations of the real horseless carriage which is destined to form a most potent factor of the American automobile industry in the near future. Minus the power plant, the scale on which this truly American type of vehicle—the top buggy—is turned out by the large factories of the West is something almost inconceivable. Automobile plants usually rate their output as "so many a week," but many large buggy factories say "so many an hour," and the annual total is something stupendous, for every country dweller owns a buggy, even if he can boast of no other means of transport. It is a firm that has long catered to the wants of the rural resident in this field—the Columbus Buggy Company, Columbus, O.—that has now undertaken the task of building popular-priced automobiles on a similar scale. And that it can "deliver the goods" with its buggymobile, to make use of a bit of vernacular, was amply demonstrated by the test run of one of these cars, as here illustrated, from Independence to Columbus, a distance of 200 miles, which was made at a total cost of slightly less than \$1.60 for two passengers, or way below railway rates.

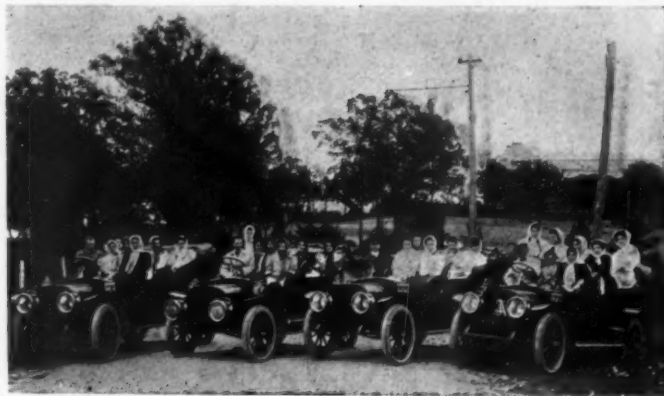
Simplicity is naturally the keynote of any such vehicle, but economy in operation is nevertheless paramount. In fact, it is



COLUMBUS BUGGY COMPANY'S LATEST PRODUCTION.

the matter of economy of maintenance that counts highest in the estimation of the average user of this class of vehicle, but that both these highly important essentials have been achieved by Designer C. C. Bramwell in a manner hitherto unapproached is the opinion of President C. D. Firestone of the company, as well as of all who watched the car's record-breaking performance under most adverse weather and road conditions. With a rather important exception, that of the power plant, the details of the entire vehicle can be taken in at a glance. The motor, located under the body, but readily accessible by lifting the footboards, is of the two-cylinder horizontal type, air-cooled, and is rated at 10 horsepower. High tension ignition using dry batteries is fitted, the twin-coil being placed on the dash, this and other accessories such as the carbureter being of a high grade. The motor drives to a countershaft by single chain and the latter in turn is connected to the driving wheels by ropes. Both axles are single pieces of solid steel of square section, full elliptic springs constituting the suspension, the rear springs being of the scroll type. Steering is by tiller mounted on a vertical standard at the left-hand side, while the gasoline tank is located under a short bonnet forward of the dash and holds a liberal supply.

Lake Geneva, Wis.—Work has been commenced on a new building to be occupied by Samuel T. Hutchinson, on the north end of Lake House, facing Broad street. The building is to be used as a garage and repair shop.



ADAMS FARWELL CARS TAKE GRADUATING CLASS RIDING.

At the close of the college commencement season, the Adams Company of Dubuque, Ia., placed at the disposal of the graduating class of Mount St. Joseph's Academy, a number of Adams-Farwell cars for an outing. The picture was taken on leaving the academy grounds.

ON TIRE BLOWOUTS AND THEIR CAUSES.

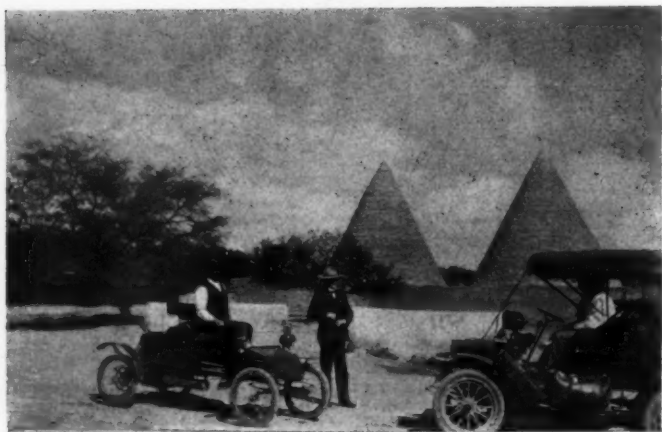
Generally, when an automobile tire bursts on the road, the driver searches round for the sharp stone or other cutting object and fails to find it. As a matter of fact, says Michelin, the tire expert, a tire rarely bursts immediately after coming in contact with a sharp stone and the victim of a blow-out should not search around him on the road, but go back twenty or thirty miles if he wishes to make acquaintance with the cause of his disaster. After some heavy strain on its fabric, a tire may noisily depart this present life on the lonely highway. The decease may be legitimate, arriving after long loyal service. Or it may be that a strong constitution is undermined, after a short life, through excesses of the lord and master. It should never be forgotten that weight is a deadly enemy.

Insufficient pressure causes rapid deterioration of an automobile tire. If an accident happens when the car is loaded and the pressure in the tires is lower than it ought to be, the driver frankly takes the blame on himself. Sometimes the blowout will occur when the driver is alone in the car and when his tires have been inflated to the exact degree. Or it may be, though the case is rare, that the disquieting report is heard when the machine is in the garage. In such a case the manufacturer is blamed for supplying an inferior article, blamed vigorously and with apparent justice. The automobilist should consider, however, that he may, after all, be responsible. His tires are properly inflated to-day, but in what condition were they used yesterday and the day before is another question.



WHERE THE BIG AND LITTLE FORDS ARE TRIED OUT.

That Ford Sixes are subjected to severe high-speed tests is shown by the above picture taken on the Highland race course, Detroit, the one-mile track which the Ford Motor Company recently purchased with 60 acres of ground, on which the new Ford plant is to be erected.



A CHANCE MEETING NEAR AGUAS CALIENTES, MEXICO.

Reo touring car and an Orient Buckboard exchanging greetings many miles from home in the interior of Mexico. The cones in the background are corn storehouses built of adobe—sun-baked brick—familiar Mexican landmarks.

PREMIER CAR ROLLS UP PHENOMENAL MILEAGE.

With the accidental breaking of a wire while changing batteries there was brought to an end, through a mere technicality, one of the longest non-stop motor runs ever made. At 10 o'clock on the night of June 3 a regular stock Premier 24-horsepower car was cranked by Frank P. Miller, president of the Bridgeport Automobile Club, in a drenching rain, which continued for the greater part of the first week, keeping the roads in a heavy and continually slippery state. The run was conducted by the Fairfield Automobile Company, of Bridgeport, Conn., under the auspices of the Bridgeport club, the official record of the mileage of the car being 4,906, though the motor evidently traveled the equivalent of several hundred miles more owing to the number of stops required for replenishing the gasoline supply, changing crews and passengers and the like. No particular route was followed, the car being taken all over the State of Connecticut wherever the driver wished to go, no less than twenty round trips having been completed between Bridgeport and New York. During all this time at least two passengers were carried, and on one occasion no less than ten were taken along. Unlike the usual affair of the kind little or no attempt was made to make capital out of it, the makers of the car not being apprised of the test nor of the number of the car. The best previous non-stop record falls short of this performance by some 1,300 miles, and it seems unfortunate that the motor should have been stopped by such a trivial accident, though it must be added that the previous record of 3,600 miles was made under exceedingly strenuous weather conditions in midwinter, which is in its favor.

MORA FINISHES 3,000 MILE SEALED BONNET.

With its return to New York late last Thursday night, the Mora Racytype car completed one of the longest runs that has ever been made under sealed bonnet conditions. It will be recalled that this was one of the cars that competed successfully in the recent contest of the Automobile Club of America, and not satisfied that 600 miles represented anything like the end of endurance in this respect, the car was immediately despatched to Chicago to take part in the endurance run of the Chicago Automobile Club which was held under sealed bonnet conditions. Having successfully accomplished this also the car was again turned homeward to retrace the route to New York, rolling up a mileage of 3,219 miles when it finally got back to "automobile row." During all this time the car was run with the same seals on the bonnet, coil box, battery, change-speed gear case, rear axle and the like. The car was driven in both contests by W. H. Birdsall, and from the factory at Newark, N. Y., to Chicago and return by J. H. Stickney and J. David, while on the round trip to the factory it was piloted by F. Cimiotti, the New York agent.

PERLMAN ACQUIRES THE AEROCAR AGENCY.

An interesting development in the selling end of New York's automobile row came to light in the announcement that C. A. Benjamin, vice-president and general manager of the Aerocar Company, Detroit, Mich., has just closed a contract with L. H. Perlman, of the Welch Motor Company, of New York, to also handle the Aerocar in this territory. The negotiations were carried on without the slightest hint leaking out, and the deal, which is of considerable importance, was quietly consummated before the trade had an inkling of it. Credit for the successful carrying out of the transaction is due in no small measure to A. M. Robbins, manager of the Aerocar Company's New York branch, to whom the matter of securing proper metropolitan representation for the 1908 Aerocars was entrusted. Knowing both the car and trade thoroughly, Mr. Robbins had no difficulty in settling upon Mr. Perlman as best adapted to carry on an aggressive campaign, while the latter had also been looking about for a medium-priced American car of established reputation and ability to handle for the season of 1908. Mr. Robbins has already made the car well-known in New York, while the car itself has made its ability a matter of common knowledge, so that in adding the Aerocar to the Welch Mr. Perlman found just what he had been looking for since the opening of the year.

MOTZ CO. ELECTS OFFICERS FOR THE YEAR.

AKRON, O., July 8.—At its annual meeting of the stockholders of the Motz Cushion Clincher Tire Company the following directors were chosen: Charles Motz, Gus Burkhardt, Nick Seil, Dr. H. J. Saunders, William Wolf, N. C. Stone and Paul E. Bertsch. The directors then held an election of officers, Charles Motz being chosen president, Gus Burkhardt vice-president, Nick Seil secretary and treasurer. The company has completed preparations to make the new Motz non-skid cushion tire which has been perfected. In the immediate future particular attention will be devoted to foreign business, as the company owns patents covering the rights on its tire in Great Britain, Canada, France and Germany.

AKRON TO HAVE FINE GARAGE BUILDING.

AKRON, O., July 8.—The Akron Automobile Garage Company, of this city, has just consummated the purchase of a site in the center of the business district and will immediately undertake the erection of what will be one of the finest garages in the State. The building is to measure 165 feet in length by 70 feet wide, and it will be of modern construction and fireproof.



AEROCAR BASEBALL NINE STARTING OUT FOR A GAME.

In Detroit an unusual amount of baseball playing material has been discovered in the automobile factories, and it now boasts of an Automobile Manufacturers' Baseball League, games being played every Saturday afternoon. C. A. Benjamin, vice-president and general manager of the Aerocar Company, is an enthusiastic promotor of the League and has organized the lively team shown in the picture among the Aerocar factory employees.

DEATH OF A WELL-KNOWN TRADESMAN.

DETROIT, MICH., July 8.—Roger J. Sullivan, secretary of the Wayne Automobile Company, died at the Colonial Hotel, Mt. Clemens, Mich., Tuesday, July 2. Mr. Sullivan had been suffering from uremia for some months and had been a frequent visitor to Mt. Clemens in the hope of getting relief. His condition was not considered grave until a few days before his death, and he had been able to devote a portion of his time to business matters.



ROGER J. SULLIVAN.

Although but 39 years of age, Mr. Sullivan had accomplished much in his lifetime. Entering the employ of a dry goods house when 14 years old, he studied telegraphy nights and was soon able to take a position as operator in the old Board of Trade office. From here he was called to a similar position in Chicago, telegraphers' paralysis, which developed two years later, necessitating his retirement from the key. Returning to Detroit, he entered the employ of a house-furnishing establishment,

thirteen years ago starting in business for himself and at the time of his death having one of the largest furniture stores in the city. He organized the Wayne Automobile Company and was secretary of the concern from its inception. Mr. Sullivan's business interests did not occupy all his time, however, and he was identified with numerous fraternal and social bodies. The funeral was held Friday morning.

MAXIM TO RESIGN FROM ELECTRIC VEHICLE CO.

On August 1 Hiram Percy Maxim, who has held the position of chief engineer to the Electric Vehicle Company, Hartford, Conn., ever since the inception of the latter company, will sever his connections with it in order to devote his attention to some new developments, details of which are not forthcoming at the moment, but which will be made public later. Mr. Maxim is to remain in Hartford, and will open an office of his own there immediately his resignation takes effect.

His career in connection with the development of the automobile in this country is of considerable interest, as he was one of the first to devote serious attention to the subject. In 1895 he built a three-cylinder air-cooled engine, which was placed on a tricycle with a planetary change-speed gear. This machine attracted the attention of Colonel Pope, who purchased it in July, 1895, and engaged its builder at the same time, this event marking the genesis of the present Columbia car. The Columbia electric vehicles were also undertaken at the same time, and it is of interest to add that a number of the original Columbia electric phaetons are still in active service, which is a tribute to their design.

RECEIVER FOR THE CRAIG-TOLEDO COMPANY.

TOLEDO, O., July 8.—Granting the request of the involuntary petition in bankruptcy recently filed against the Craig-Toledo Motor Car Company by three of its creditors, the Carpenter Steel Company, the Harris Manufacturing Company, Reading, Pa., and Charles E. Miller, New York, E. J. Marshall has been appointed receiver by Referee in Bankruptcy Belford. The claims of the three petitioning creditors are said to amount to \$3,486.26, and it is reported that the alleged bankrupt has admitted its inability in writing to pay them. The liabilities are thought to total close to \$60,000. The Craig-Toledo Company is a comparatively new concern which has been assembling a limited number of cars at Dundee, Mich. It was the declared intention of the company to establish a plant at Monroe, Mich., the latter town having voted a bonus of \$10,000.

CORBIN SPRINGS SURPRISE ON ITS AGENTS.

During the past week the Corbin Motor Vehicle Corporation has been sending out a circular letter to its agents informing them of the plans of the house for 1908, and not the least startling assertion contained therein is the fact that they have decided to bring out a water-cooled car for next season. It is to be a 35-horsepower machine of the light touring type, seating five people and in every respect a modern and well-designed car. This does not mean that the Corbin air-cooled car is to be discontinued—quite the contrary. It has demonstrated its fitness in no uncertain manner in every contest that it has entered, and with a few minor improvements will be the subject of a greater amount of attention on the part of its builders during next season than ever. The new car has simply been designed to meet the very evident and general demand that exists for a medium-priced water-cooled car. The figure at which the new machine is to sell has not been determined as yet, but it is expected to have demonstrating cars of this model ready for delivery by October 1. The greatest surprise, however, is being held in reserve and will not be announced until later.

IMPORTERS' SALON TO BE AN EXCLUSIVE SHOW.

While the rules for the holding of the Importers' Automobile Salon, which is to fill Madison Square Garden with imported cars from December 28 to January 4 next, are practically a replica of those in force at previous shows, attention does not appear to have been directed to an apparently innocuous clause forming the end of paragraph III under Allotment of Space:

"No exhibitor shall be allowed to exhibit, who has, either directly or indirectly, through dealers or agents, exhibited automobiles in any show in Greater New York, between February 1, 1907, and December 28, 1907," a provision that is evidently aimed at importers who take part in either the independent or the licensed shows here this fall, as both occur within these dates.

AMERICAN AUTOMOBILES FOR EUROPE.

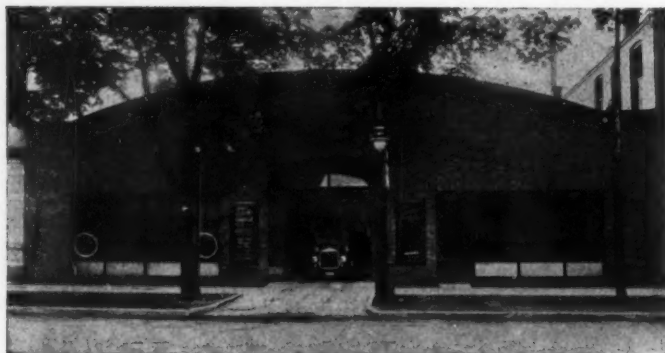
Fifteen hundred Dragon automobiles for southern Europe indicate that the American machine has made good in the Old World. Negotiations for the supply of this number of machines to Messrs. Perretti & Company, of Florence, Italy, have been completed by the Dragon Automobile Company, proving a distinct demand for a moderate-priced American machine capable of competing with the European product. Three hundred cars a year, for a period of five years, are to be supplied, to be distributed, according to the contract, throughout Europe, comprising Russia and Turkey and European States near the Mediterranean.

SLIGHT CHANGES TO MARK ELMORES FOR 1908.

CLYDE, O., July 8.—Details of the changes to be made in the 1908 models of the Elmore cars have been made public, from which it is learned that the only radical innovation to be made consists of the equipment with an improved form of rear-axle driving unit. Other modifications consist of refinement in the motor, giving it a capacity of six horsepower over its present rating, which, however, will remain the same, a reduction in the gross weight of the car by 200 pounds, the introduction of an improved pressure type of oiler, and the location of both sets of brakes on special drums in the rear wheel hubs.

SPRINGFIELD, O., TO GET FRAYER-MILLER PLANT.

SPRINGFIELD, O., July 8.—It is confidently expected here that the Oscar Lear Automobile Company, builders of the Frayer-Miller cars at Columbus, will remove its entire plant to this city within the next sixty days. The capital stock of the company is \$200,000, and half of this amount has been subscribed by local capitalists, while the local stockholders will also have a majority representation on the board of directors.



INDIANA'S FINEST GARAGE AT SOUTH BEND, IND.

THE FAST GROWING GARAGE LIST.

A Fine Automobile Installation at South Bend.

SOUTH BEND, IND., July 1.—Located one block from the Oliver Hotel, at 121-125 South Lafayette street, the Twentieth Century Motor Car Company has now one of the finest garages in the State of Indiana. The building is 65 by 160 feet, constructed of brick and concrete, without a post, the roof being supported by a steel frame. Ample light is obtained by large windows in the roof. A complete machine shop is fitted within the garage, equipped with all modern machinery, each piece being driven by an individual motor. There is a commodious waiting room for ladies, and the entire building is fireproof. Horace E. Kizer and M. L. Williams are at the head of the company, the latter gentleman being also chairman of the Touring Committee of the South Bend Automobile Club.

Springfield's Latest Automobile Home.

SPRINGFIELD, MASS., July 1.—A new automobile garage has been opened at 22 Taylor street by the Geisel Automobile Company. The frontage on Taylor street is 56 feet, of plate and prismatic glass, with a 14-foot door in the center and an office on the right. Particularly roomy and well equipped, the garage has, among other conveniences, six 16-inch ventilators to remove exhaust fumes, three steel receptacles for oily waste, six drop lights with 20-foot cords for inspection of cars, and three long brackets, with ball-and-socket joints, to throw light on any part of a machine. A large skylight gives illumination from overhead.

NORWALK'S MODERN AUTOMOBILE STATION.

NORWALK, CONN., July 8.—This city, which is situated on the direct route from New York to Boston—probably the most traveled automobile route in the country—can boast of station and repair facilities that are quite in keeping with its prominence as a



NORWALK AUTO STATION ON THE BOSTON-NEW YORK ROUTE.

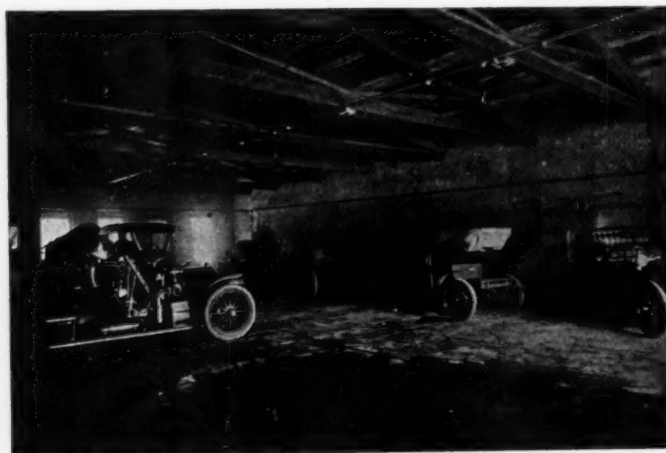
stopping place on a main automobile route. The photographs illustrate the exterior and interior of the new garage of F. W. Lockwood & Company, which is located at 39 Wall street. The building is constructed of ornamental pressed concrete blocks, with a concrete floor, and is in every other respect both fireproof and of modern design, besides being equipped with every facility for the maintenance and repair of a large number of cars.

NOTES OF THE GARAGES.

Wheeling, W. Va.—At Sixteenth and Chaplaine streets Jason Stamp has built a large garage, which, when complete, promises to be one of the best automobile establishments in the Central West.

Sturgis, Mich.—A two-story automobile garage, with a floor space of 30x110 feet, has been commenced here for J. R. Kirkpatrick. A well-fitted machine shop is comprised, and a full supply of accessories will be carried. It is contemplated handling the Matheson and other agencies.

Portsmouth, N. H.—Negotiations have been concluded for the lease of August Hett's property, at the foot of Brewster street, for an automobile garage and repair shop. Wharf room has also been obtained at the South End, where a large gasoline tank will be erected from which to supply motor boats.



INTERIOR OF F. W. LOCKWOOD & CO.'S NORWALK GARAGE.

Ligonier, Ind.—A new two-story garage, 44 feet by 60 feet, provided with a first-class repair shop, has been opened here by T. A. Graves. In view of the passage of the Glidden tourists, the proprietor is preparing to carry an extra large supply of gasoline, and will make regular rates on all materials.

La Grange, Ind.—Two of the strongest points of interest in this town are at the La Grange Machine Works, where H. W. Lampman, an old Chicagoite, has a first-class repair installation, and the new garage (60x60 feet) which is now being run up for C. W. Timmes, and which promises to be thoroughly up-to-date.

Reading, Pa.—At the Berks Auto Garage Company on Cherry street, Reading now possesses one of the best equipped garages in the State. Its installation comprises large storage room, machine shop, handsome office, with private room attached, together with bathroom for the benefit of employees. The company has the Jackson, Stoddard-Dayton and Maxwell cars.

Pittsburg, Pa.—The downtown garages of Pittsburg are doing such a business this year that it is freely predicted that in 1908 many of the East End garages will be abandoned. The latest concern to move downtown is the Standard Automobile Company, which has taken an entire floor in the new Century Building, in Seventh street. Other firms which have felt the downtown boom are the Banker Brothers Company, in Diamond street, and E. D. Nevin, who is selling Darracqs at 507 Wood street.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

At the last meeting of the American Motor Car Manufacturers' Association the Gearless Transmission Company of Rochester, N. Y., was admitted to membership by the committee on management.

The Carter Motor Car Corporation, of Detroit and Washington, and which has branch offices in various cities of the country, is now building a factory at Hyattsville, Md., to supply the demand for their cars in the East and South. This concern holds patents on the Carter two-engine car which is being exhibited at the Jamestown Exposition.

Harry E. Dey, who drove the big six-cylinder Pierce Pathfinder on the mapping out run for the three A's tour, started to go over the same route at the wheel of the same car again on Wednesday when the tourists left Cleveland. The car, which was the first six-cylinder turned out by the Pierce company, had already covered 31,000 miles before starting on the pathfinding trip.

At a meeting of the creditors of the Four Wheel Drive Wagon Company, of Milwaukee, Wis., a dividend of eight per cent. was declared, and it is thought that a second dividend of the same amount will be paid before the affairs of the defunct company are settled. The proved claims now on file amount to \$190,000, and the Fidelity Trust Company, the trustee in bankruptcy, has about \$36,000 on hand for distribution.

Since the unusually successful completion of the contest held by the Automobile Club of America, a number of cars have developed the "sealed bonnet habit." The Haynes runabout, which scored a victory in the New York to Albany run and which later competed successfully in the sealed bonnet contest, is one of them, and is still running with the original seals intact. The car is being driven by C. B. Warren, who piloted it in both of the contests.

It is reported here that the Light Inspection Company, of Hagerstown, Ind., has just received an order from an Indianapolis concern for \$80,000 worth of a new type of four-cylinder automobile engines, which are the invention of C. N. Teeter. The company is preparing to enlarge its plant and greatly increase its facilities in order to take care of the extra work involved, the building of gasoline automobile engines being a new departure.

It is interesting to note that out of the seventy-one entries for the A. A. A. tour now under way thirty-seven of the cars are equipped with Diamond tires. In order to facilitate tire repairs en route, the Diamond Rubber Company has accordingly made arrangements to send along a traveling stock of tires so that the contestants will be relieved of the necessity of carrying a number of extras. These are being carried in a touring car fitted with a special body to accommodate them and which will be in charge of H. G. Smith, of the Cleveland Diamond branch. About one-half of the cars are equipped with quick detachable rims among which the Marsh figures prominently.

Under the title of "Route Book No. 4," the White Company has just issued detailed road directions for reaching the Jamestown Exposition via the "air line" route by way of Philadelphia, Wilmington, Dover and Cape Charles. Supplementing the instructions

for reaching the exposition is an illustrated article replete with useful hints for tourists contemplating a trip in that direction. Road directions are also given for a tour from Baltimore, over the national highway to Frederick, and then by way of Harper's Ferry to Hallsboro, W. Va., where connection is made with routes north and south, described in the White Route Book No. 2. A feature of the book that will be appreciated is a fine double-page map. Copies will be sent gratis on application to the White Company, 300 Rose building, Cleveland, O.

RECENT TRADE REMOVALS.

The Randall-Faichney Company, maker of the well-known B-line oil and grease guns, has moved from the Sudbury Building to 251 Causeway street, where it has secured new quarters, affording 16,000 square feet of floor space. This increase in facilities will enable the company to take care of the increased demand for its products that has been manifest for some time past.

The Automobile Sales Corporation of New York, with quarters at 1662 Broadway, near Fifty-second street, is now selling the 1907 product of the Daimler Manufacturing Company, of Steinway, N. Y. The company has recently removed to large new showrooms at this address and is making immediate deliveries of the American Mercedes cars, which are still being handled by J. J. Evans.

NEW AGENCIES ESTABLISHED.

The Brown-Friend Motor Company, a newly formed concern, of which the members are G. W. Brown and Otis C. Friend, both well known in Chicago's motor colony, have opened for business at 230 Wisconsin street, Milwaukee, Wis., and will handle the Mitchell agency for that and neighboring territory.

Under the management of William C. Chambers, formerly of the Hamilton Auto Company, and with J. M. Hannick as a partner, the Universal Auto Exchange was recently opened at 1352 Wood street. A full line of automobile accessories of every kind will be carried, including a complete stock of tires, Mr. Hannick being conversant with this line through his former connection with the Michelin tire agency in this city.

PERSONAL TRADE MENTION.

W. Wayne Davis, formerly with the Keystone Motor Car Company of Philadelphia, has taken charge of the Peerless department of the Quaker City Automobile Company. Mr. Davis is one of Philadelphia's pioneer automobile salesmen.

Frank H. Burmester, of the Burmester Rubber Company of Boston, has severed his connection with that concern and gone with the Firestone Tire and Rubber Company of Akron, O., in the capacity of New England traveling representative.

J. B. Kavanaugh, formerly with the Hartford Rubber Works, Hartford, Conn., has severed his connection with that house in order to assume the management of the Cleveland branch of the Fisk Rubber Company and will immediately enter upon his new duties.

R. E. Olds, president of the Reo Motor Car Company of this city, and chairman of the legislative committee of the American Motor Car Manufacturers' Association, sailed for the other side with his family on the Fraf-Waldersee. He will remain abroad for two months, most of the time being spent on the Continent in the dual pursuit of pleasure and business, automobile conditions being studied with a view to arranging for the placing of Reo agencies.

Ezra E. Kirk, formerly general sales manager of the E. R. Thomas Motor Company, Buffalo, who recently resigned to go into the garage business at Toledo, O., under the name of the Kirk Bros. Automobile Company, has just sold his interest in the latter concern and has retired as president and director of the company, H. W. Fraser having been elected to the office in his place. Mr. Kirk has been such an active participant in automobile trade affairs for some time past that it is hardly likely he will remain long out of business, and he will doubtless be heard from soon.

M. J. BUDLONG RETIRES.

Milton J. Budlong, for four years president of the Electric Vehicle Company of Hartford, Conn., has resigned, to take effect September 1. He will take a long and much needed rest before announcing his future plans. His successor has not yet been named.

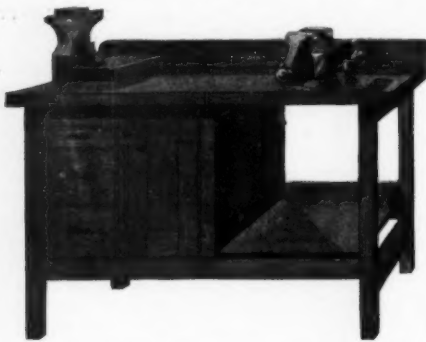
Mr. Budlong is one of the best known men in the automobile business in this country. For nine years he has been connected with the Electric Vehicle Co. in various capacities. He was treasurer, vice-president and general manager and latterly president, succeeding George H. Day when the latter became manager of the Association of Licensed Automobile Manufacturers. Mr. Budlong was connected with the Pope interests in their early days, and he later became secretary and treasurer of the Siemens Halske Electric Company, of Chicago. When Mr. Day became head of the Electric Vehicle Company Mr. Budlong became the western manager, in which position he remained until he was called to Hartford to take the position of vice-president of the company. He was subsequently elected president of the National Association of Automobile Manufacturers, and for four years has been one of the most active and successful of the younger men in the American automobile industry.

LARGE STEARNS CONTRACT.

F. B. Stearns, of the Stearns Automobile Company, Cleveland, O., has just closed a contract with Wyckoff, Church & Partridge, of New York City, for the sale of the Stearns in the metropolis for the next three years. The minimum value of the cars to be sold in that time is \$3,000,000, thus making the contract one of the largest agency deals ever consummated. Wyckoff, Church & Partridge are not new to the Stearns, as they have been handling it for the past year and know what they can do with it in the way of sales, which accounts for the large guarantee.

INFORMATION FOR AUTO USERS.

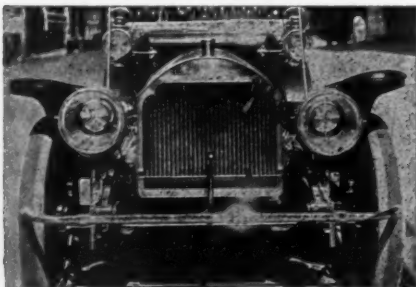
The Universal Repair Bench.—The greatest need of every autoist who takes care of his own car, and the number that do so is constantly on the increase, is an appropriate place to work, together with a convenient place to store his tools. These are provided in an up-to-date manner in the Universal Repair Bench, a photograph of which is shown herewith. It is manufactured and marketed by the Universal Repair Bench Company, Rochester, N. Y.,



UNIVERSAL REPAIR BENCH AND FITTINGS.

and is fitted with a high-grade swiveling vise and a bench block of special design, which will be found useful in a hundred and one different ways when making small or even serious repairs to an automobile. The bench itself is built of the best seasoned lumber, with a hardwood top, mortised and glued, and measures two feet wide by five feet long and three feet high. It is provided with four drawers, a cupboard and plenty of shelf room for the accommodation of tools.

The Automatic Searchlight.—Autoists have long felt the need of some device to cast the light of one of the headlights in the same direction as the car turns when rounding a curve, and use of such an aid to night driving would be general. O. E. Halderman of Marion, Ind., has given considerable study to the matter and as a result is now marketing what he calls an "automatic searchlight." The device consists of a vertical bracket supported on a two-point bearing, forming a support for the light, with an adjustable spring between



HALDERMAN'S AUTOMATIC SEARCHLIGHT.

the two points. It is attached to the frame or body of the car and is operated by means of a rod extending downward from the bracket, which connection causes the right-hand lamp to turn only when the car turns to the right, or to the left in the case of the left-hand lamp, thus leaving one lamp heading in the same direction as that in which the body of the car is pointing, while the other follows the line of the steer-

ing wheel and shows exactly where the latter is going when rounding a curve. When the car resumes a straight course the adjustable spring mentioned causes them to return to their normal straight-ahead position, as shown by the accompanying photograph of a car fitted with these brackets.

Safety Relief and Cut-out.—The Gray-Hawley Manufacturing Company, Detroit, Mich., are placing on the market, as an addition to their extensive line of specialties of this kind, an advanced type of muffler cut-out and safety relief, which is practical and durable as well as readily attached to any car. The safety relief feature consists of an opening governed by a nut and oil-tempered spring, the latter being placed outside, so that it is not affected by the heat. When installing it the spring is adjusted so as to keep the opening closed under normal conditions, so that when a charge is exploded in the muffler it instantly releases the pressure and prevents imposing undue strain on the latter. The valve body, lever and brackets are made of malleable iron. The valve runs in three guides, and is



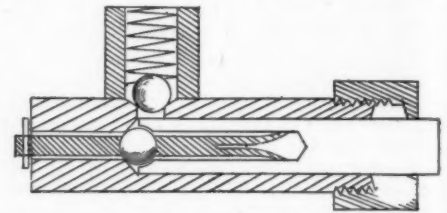
GRAY-HAWLEY MUFFLER CUT-OUT.

ground into its seat, thus insuring a good fit. The bracket swivels on a lock nut and may be turned to any position desired, while the lever is also reversible, thus making it easy to install the cut-out without the necessity of using bell crank levers or other complicated means for its operation. The appearance and simplicity of the device may be judged from the accompanying illustration of it, showing it complete.

Automobile Comfort.—Under this title the makers of the Rough Rider Ventilated Spring Cushions, the Ventilated Spring and Cushion Company, Fisher Building, Chicago, Ill., have issued a neat booklet showing in a telling manner by means of text and appropriate illustrations the great advantages of their system of ventilated cushions over the ordinary kind, and also giving a partial list of American automobile builders who have adopted their springs as a part of the regular equipment of their cars. As the names include some of the most prominent builders in this country this is not the least valuable part of the booklet to the maker who is seeking goods of this character, for the average man usually wants to know who else is making use of a thing before he decides to try it for himself. Rough Rider springs are not the ordinary kind—just coils of wire between two braces

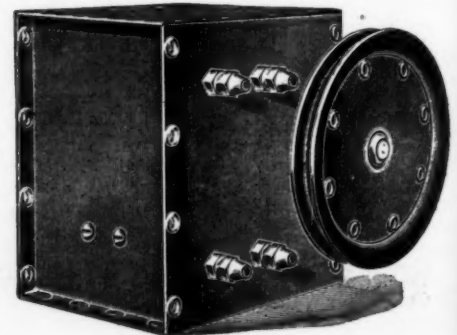
—they are special springs in many ways, but in addition, the spring cushions made by this firm embody a unique provision in the shape of an auxiliary set of springs, to take care of those unexpectedly hard bumps that bring the ordinary cushions down to their foundations when passing over them.

Schoelkopf Lubricators.—Probably not one autoist in a hundred could mention off-hand the various styles of lubricators that are used on the automobile, nor, for that matter, can the average driver tell an inquirer just how the particular device that is on his own car operates. For this reason



SECTION SHOWING PLUNGER AND VALVES.

the pamphlet issued by the Schoelkopf Manufacturing Company, Madison, Wis., under the title of "A Treatise on Mechanical Lubrication," is of more than passing interest to those who are not as familiar as they might be with this most important essential. It reviews all the standard types of force-feed lubricators on the market, with an explanation of the principle on which they work, and shows, moreover, how they differ from the Schoelkopf lubricator, sectional illustrations of which serve to show its simplicity. It also sums up the ideal lubricator as follows: "An exceedingly simple and positive method of conveying oil to the various parts of the motor and car, from a large container, and means for showing at a glance the amount of oil passing through each lead, with force sufficient to be unaffected by temperature variation or particles of foreign matter in the lubricant."



SCHOELKOPF LUBRICATOR NO. 26.

The Schoelkopf lubricator is the result of five years' study of the problem, and its pump embodies all the simplicity of the regular check-valve type, with its great objections eliminated, as will be seen from the illustrations depicting a sectional view of the barrel, showing the plunger and valves.

NEW TRADE PUBLICATIONS.

From the Morgan & Wright factory at Detroit a couple of neat folders have come forth in praise of the firm's well known products. The subject of good tires is handled, convincing arguments being put forth to prove this quality in the Morgan & Wright article.